



University of Colorado **Denver**

# 2020-21 Graduate Catalog

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Office of the Registrar

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# 2020-2021 GRADUATE CATALOG



**CU Denver**  
Auraria Campus  
Speer Boulevard at  
Larimer Street  
[ucdenver.edu](http://ucdenver.edu)

**Information/Domestic Admissions**  
Phone: 303-315-2183  
Email: [Graduateadmissions@ucdenver.edu](mailto:Graduateadmissions@ucdenver.edu)

**Office Location**  
Lawrence Street Center  
1380 Lawrence Street Center, Suite 1251  
Denver, CO 80204

**Mailing Address**  
Graduate Admissions  
Campus Box 163  
PO Box 173364  
Denver, CO 80217-3364

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Phone: 303-315-2382  
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**Office Location**  
Student Commons Building  
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The 2020-2021 CU Denver catalog is considered the source for academic and programmatic requirements for students entering programs during the Fall 2020, Spring 2021, and Summer

2021 semesters. Although this catalog was prepared using the best information available at the time, all information is subject to change without notice or obligation. The university claims no responsibility for errors that may have occurred during the production of this catalog.

The courses listed in this catalog are intended as a general indication of the University of Colorado Denver curricula on the Denver campus. Courses and programs are subject to modification at any time. Not all courses are offered every semester, and faculty teaching particular courses or programs may vary from time to time. The content of a course or program may be altered to meet particular class needs.

Previous editions of this catalog are available [online](#).

The University of Colorado Denver is an affirmative action/equal opportunity employer and educator committed to excellence through inclusiveness.

## ABOUT CU DENVER



### **Welcome to Colorado's public urban research university,**

where a diverse student body through quality academics, ambitious research and creative work, and community engagement in the city we call home. We are CU in the city.

Your success is our #1 priority. At CU Denver, you will benefit from:

**Academic choices:** More than 100 high-quality, in-demand degree programs in seven schools and colleges, leading to bachelor's, master's and doctoral degrees; hands-on learning opportunities, including work in research labs, service learning, study abroad and work-study;

**Powerful connections:** To partnerships, projects, internships and career opportunities in downtown Denver; to the vibrant arts and culture scene at our front door; and to a network of influential alumni who are leaders in Denver's civic, nonprofit and business communities;

**Outstanding location:** Access to a vibrant, safe urban lifestyle; resources and support to develop innovative solutions to complex local and global issues; and opportunities to build your skills in the city ranked by Forbes as the #1 Best Place for Business and Careers.

CU Denver is a place of academic excellence, where you will gain the powerful combination of immersive classroom and project-based experiences that are in demand today. Here you will meet gifted faculty, experts in their field, dedicated to student success, academic excellence and the real-world applications of their research and creative work. You'll interact with fellow students who are diverse, goal-oriented and energetic. Whether you engage in undergraduate or graduate studies, the University of Colorado Denver degree earns global respect and you can be confident that you will have been well-prepared for the next stage of your work or academic life.

We're delighted you've chosen CU Denver!

Dorothy A. Horrell, PhD  
Chancellor

## **Executive Team**

### **Dorothy A. Horrell, PhD**

Chancellor, University of Colorado Denver

*BS, Colorado State University*

*M.Ed, Colorado State University*

*PhD, Colorado State University*

### **Roderick Nairn, PhD**

Provost and Executive Vice Chancellor for Academic and Student Affairs

*BSc, University of Strathclyde (Scotland)*

*PhD, University of London (England)*

### **Jennifer Sobanet**

Vice Chancellor for Administration and Finance, CU Denver

*BS, Marshall University*

*MA and MBA, University of Pennsylvania, The Wharton School*

### **Alana C. Jones**

Interim Vice Provost and Senior Vice Chancellor for Student Access and Achievement

### **Melisa Baldwin**

Vice Chancellor for Advancement, CU Denver

*BA, University of West Florida*

*M.Ed., University of West Florida*

**Karen Klimczak**

Interim Vice Chancellor for University Communications

*BS, Georgia Institute of Technology*

*MBA, Arizona State University*

**Thomas Flaig, MD**

Vice Chancellor for Research

*BA, Saint John's University (MN)*

*MD, University of Minnesota Medical School*

**Nelia Viveiros, EdD**

Interim Vice Chancellor for Diversity and Inclusion

*BA, Temple University*

*MSc, London School of Economics (England)*

*JD, University of London (England)*

*EdD, University of Colorado Denver*

## University of Colorado Denver

The University of Colorado Denver was formed on January 11, 1973, lawmakers, upon proclamation of the governor, amend that state constitution to establish additional CU campuses, transforming the University of Colorado - Denver Center into the University of Colorado Denver (CU Denver). In 1977, CU Denver students began taking classes on the Auraria campus. Today, CU Denver educates more than 15,000 students and is the only public urban research institution in the state of Colorado.

The University of Colorado Denver offers a unique academic experience for students. Conveniently located in the heart of Denver, our students have unparalleled access to the business, cultural and political capital of the West. CU Denver is where academic rigor meets city vigor.

More and more undergraduates are discovering the value of classes in the city taught by professors who are connected to local companies and organizations. New housing adjacent to campus, easy commuting by RTD Light Rail and discounts to cultural and sporting events give students many options for immersion in vibrant city life. In addition, affiliations with research labs and hospitals at CU Anschutz make CU Denver an excellent place to start a health care career.

The University of Colorado Denver enrolls students from 46 different states and countries, and awards over 3,800 undergraduate and graduate degrees every year. It is known for its programs in urban sustainability, criminal justice, business, education, applied science and engineering, film and music industry as well as a full array of professional health programs. The graduate student population is a diverse mix of ages and ethnicities, creating a rich environment for learning and networking.

Other reasons why students choose the University of Colorado Denver:

**Small class sizes:** average undergraduate student-to-teacher ratio is 18:1.

**The Denver vibe:** Colorado has always attracted the adventurous. Denver ranks as #1 Best Place to Live (U.S. News & World Report), with an extensive network of bike trails and quick access to mountain sports. CU Denver is adjacent to a thriving arts district.

**Collaborative culture:** Cross-disciplinary learning and research is a core value: programs blend technology with health care, business with public policy, and behavioral health with architecture.

**Choices:** With seven schools and colleges offering more than 100 degree programs, the University of Colorado Denver | Anschutz Medical Campus is a major university for the coming century.

## CU Denver

Colorado's only public urban research university, CU Denver offers bachelor's, master's and doctoral programs in the heart of the city through seven distinct academic units:

- College of Architecture and Planning
- College of Arts & Media
- Business School
- School of Education & Human Development
- College of Engineering, Design and Computing Course
- College of Liberal Arts and Sciences
- School of Public Affairs

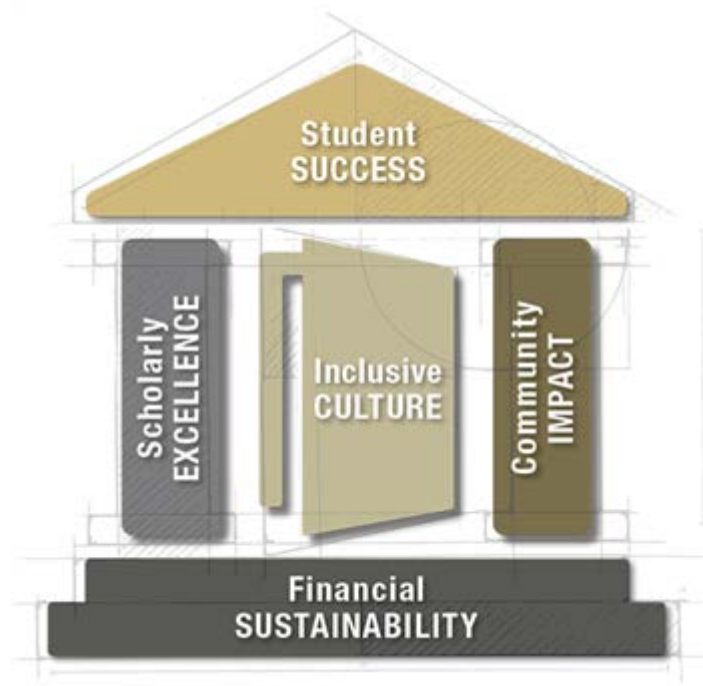
## Strategic Priorities

Chancellor Dorothy Horrell has established five strategic priorities to guide CU Denver's ongoing success. Through these priorities, CU Denver aims to be widely recognized as a distinctive asset in the Denver metropolitan area based on quality academics, highly-recognized research and creative work, a diverse and inclusive culture, and impactful civic engagement. The five strategic priorities are as follows:

1. **Student Success.** Our goal is to elevate student success through increased enrollment, retention and graduation rates.
2. **Scholarly Excellence.** We are focused on advancing scholarly excellence and innovation in teaching, research and creative work.
3. **Community Asset.** We are working towards strengthening our position as a vital community asset.
4. **Inclusive Culture.** We are committed to creating a more cohesive, collaborative and inclusive culture.
5. **Financial Sustainability.** Our objective is to achieve long-term financial sustainability and stability.

Faculty, staff and students across the campus have been working on various aspects of these priorities since they were first set in fall 2016. Learn about progress on each priority by clicking on the links above.

The priorities emerged from Chancellor Horrell's 2016 Reach Out and Listen Tour, a series of collaborative forums and meetings with faculty, staff, students and community members that established a shared vision for the future of CU Denver.



## University of Colorado System

The University of Colorado is a system of four campuses located in Boulder, Colorado Springs, Denver and Aurora. With combined total enrollments of over 60,000 students, the University of Colorado system consistently ranks in the top 15 among public universities and colleges in overall research expenditures and seventh among public universities in federally funded research. Awards for research within the system total more than \$920 million, with funding provided by federal agencies, appropriations from the state of Colorado and private foundations and donors.

## Board of Regents

**John Carson**  
District 6  
*term expires 2021*

**Glen Gallegos, Chair**

District 3

*term expires 2025*

**Heidi Ganahl**

At Large

*term expires 2023*

**Irene C. Griego, Vice Chair**

District 7

*term expires 2021*

**Chance Hill**

District 5

*term expires 2025*

**Jack Kroll**

District 1

*term expires 2023*

**Lesley Smith**

At Large

*term expires 2025*

**Sue Sharkey**

District 4

*term expires 2023*

**Linda Shoemaker**

District 2

*term expires 2021*

## **History and Evolution of the University of Colorado Denver**

1876 Legislature founds the University of Colorado

1883 Medical department opens with two students

1898 CU establishes School of Nursing

1912 CU organizes the Department of Correspondence and Extension in Denver

1913 CU establishes School of Pharmacy

1925 CU dedicates 9th and Colorado Blvd. medical center

1956 Regents purchase Tramway Building for Extension Division



1965 Regents change extension name to University of Colorado-Denver Center

1972 CU-Denver Center changes name to University of Colorado at Denver

1973 School of Dentistry enrolls its first class; state begins building Auraria Campus

1974 CU reorganizes as a four-campus system

1988 CU-Denver moves into the 257,000 square-foot North Classroom Building on the Auraria Campus

1992 School of Pharmacy moves from Boulder to Health Sciences Center

1995 Government conveys 217 acres at the Fitzsimons Army Base to CU for modern health sciences facility

2000 First new and remodeled facilities open at Fitzsimons

2004 Regents consolidate CU Denver and Health Sciences Center to form the University of Colorado at Denver and Health Sciences Center

2006 Fitzsimons campus renamed Anschutz Medical Campus

2007 Regents approve shortened version of the name: University of Colorado Denver

2008 Medical, dental, pharmacy and nursing students start classes, Colorado School of Public Health enrolls first students on the Anschutz Medical Campus

2011 Regents approve name change, to University of Colorado Denver | Anschutz Medical Campus

## Accreditation

The University of Colorado Denver is institutionally accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools.

The commission can be contacted at:

230 South LaSalle Street, Suite 7-500

Chicago, IL 60604

**Telephone:** 1-800-621-7440

Many professional organizations have also granted accreditation to specific academic programs, colleges and schools at the Denver Campus, including:

- Accreditation Board for Engineering and Technology
- Association for the Advancement of Collegiate Schools of Business-International
- Colorado State Board of Education
- Commission on Accreditation of Healthcare Management Education
- Council for Accreditation of Counseling and Related Educational Programs

- Council for the Accreditation for Educator Preparation
- Landscape Architecture Accreditation Board
- National Architectural Accrediting Board
- National Association of Schools of Music
- National Association of Schools of Public Affairs and Administration
- Planning Accreditation Board

## **Academic Programs**

CU Denver is devoted to the needs of the residents of the city and the region. A solid foundation of academic and general education is assured through a comprehensive core curriculum. Students may pursue graduate education through all of the campus' colleges and schools. Pre-professional training in the fields of education, architecture, law, journalism and health careers is also available. Complete listings of areas of study available on the Denver Campus are available in the Programs section of the catalog.

The colleges and schools sections of this catalog provide information on bachelor's, master's and doctoral degree programs, policies on requirements for graduation, course requirements, course-load policies, course descriptions and similar information.

## **Continuing and Professional Education**

The Division of Continuing and Professional Education offers certificate/certification courses, professional development programs, precollegiate outreach programs and personal enrichment courses across the state of Colorado. Courses are offered in a variety of formats, including traditional on-campus, off-campus, online, hybrid, weekend, evening, short and condensed courses and many others.

Registration and tuition vary by school or college. Contact the specific school or college to learn about current program and course offerings or send an inquiry to [continuingeducation@ucdenver.edu](mailto:continuingeducation@ucdenver.edu).

## **About Our Students**

The diversity of our student body is a source of deep pride. With students of color making up 42 percent of the student body, CU Denver is the most diverse research university in Colorado. Classes are filled with traditional students who enrolled after high school as well as transfer students and those who delayed college entry. Many professionals enroll mid-career to retool and strengthen their skills. The average age of an undergraduate student is 23 years while the average graduate student is 31 years old.

Bringing a rich mix of backgrounds, students travel across the country and the world to attend CU Denver. Domestic students come from 48 states and international students from 68 countries. All take advantage of convenient courses at times that meet their schedules.

An enviable student-to-faculty ratio of 18:1 and a high-tech advising platform means students receive focused attention from professors and a clear path to graduation.

## **Related Organizations**

### **CU Denver Alumni**

**Mailing Address:** 1380 Lawrence Street Center, Suite 1201, Denver, CO 80204 (*mailing and physical*)

**Telephone:** 303-315-2333

**Fax:** 303-315-2063

**E-mail:** alumni@ucdenver.edu

**CU Denver Alumni** is the formal name for our community of former students including over 94,000 graduates from any of the University's undergraduate, graduate, and certificate programs. While 69% of our graduates stay in Colorado, our global community stretches across 103 countries.

CU Denver Alumni advances the University of Colorado Denver through its graduates by inspiring pride, serving as a gateway for career resources, stimulating investment in the future, and illustrating the impact of alumni contributions to the University and each other.

**CU Denver Alumni Relations** sponsors activities and programs to benefit and engage alumni, current students, and friends of the university. By fostering loyalty among our alumni and providing opportunities for involvement, CU Denver Alumni Relations facilitates an environment in which alumni can establish life-long contact with their alma mater.

### **University of Colorado Denver - Office of University Advancement**

**Mailing Address:** 1380 Lawrence Street, Suite 1201, Denver, CO 80204

**Telephone:** 303-315-3601

**Fax:** 303-315-2063

**Email:** advancement@ucdenver.edu

The University of Colorado Denver Office of Advancement collaborates with faculty, staff, donors, alumni, and friends to raise private support for the university.

CU Denver academic leadership establishes priorities for private support, and gifts are directed to the specific schools, program, or purpose that the donor designates. CU Denver Advancement staff identify and/or generate interest in the university, assist donors in gift planning, solicit gifts in collaboration with academic partners and leaders, and establish and maintain relations with alumni. (Gift funds are managed and invested by the partner University of Colorado Foundation, which also manages the university endowment).

These gifts endow scholarships and professorships, further research, enrich academic programs, upgrade and construct facilities, and support projects and programs in all areas of the university.

## **University Quick Facts**

### **CU Denver Quick Facts**

#### **Enrollment**

- 14,947 students
- 74% undergraduate, 26% graduate/professional
- 73% full-time students
- 85% from Colorado
- 15% nonresident students of which 7% International students from 65 different countries
- 45% male, 54% female
- 44% of new undergraduate students are transfers
- 38% of CU Denver students are Pell recipients

#### **Student-to-Faculty Ratio:**

- 18:1

#### **Diverse Population:**

- 48% of undergraduates are students of color
- 52% of all new enrolled students are students of color
- Average age of undergraduate students: 23
- Average age of graduate students: 31
- Students from 48 states and DC and 65 countries

#### **Average entering ACT score:**

- 23.2 Composite

#### **Average entering SAT score:**

- 554 Math
- 559 Verbal

#### **Average high school GPA:**

- 3.5

## **Schools and Colleges on the CU Denver Campus**

College of Architecture and Planning  
College of Arts & Media  
Business School  
School of Education & Human Development  
College of Engineering, Design and Computing  
Graduate School  
College of Liberal Arts and Sciences  
School of Public Affairs

### **Programs**

More than 100 degrees and programs across seven schools and colleges

### **Degrees**

- Bachelor's
- Master's
- Doctoral
- First professional

### **Most-enrolled Undergraduate Degree Programs:**

- Biology
- Psychology
- Music
- Fine Arts
- Architecture

### **Most-enrolled Graduate Degree Programs:**

- Business Administration
- Public Administration
- Counseling
- Information Systems
- Architecture

### **Research Funding**

More than \$400 million in sponsored research annually

### **Alumni**

- 100,000+ alumni
- 71% live in Colorado

## **National Rankings**

### **US News and World Report 2019:**

- #112 among Top Public Schools
- #87 in graduate clinical psychology programs
- #69 in graduate biomedical engineering programs
- #28 in graduate healthcare management programs
- #25 among graduate public affairs programs
  - #11 in environmental policy and management
  - #21 in nonprofit management
  - #23 in public management and leadership
- #134 in online graduate education programs
- Among top public schools
- #48 for part-time MBA programs
- #52 for graduate statistics programs
- #78 for graduate mathematics programs
- #78 for graduate civil engineering programs
- #88 for overall undergraduate business programs

\*\*For the most up to date information, visit the following website: <http://www.ucdenver.edu/about-us/facts/>

# INFORMATION FOR GRADUATE STUDENTS

## **Graduate School**

Welcome to the Graduate School at CU Denver. Almost half of our students on the Denver Campus are enrolled in graduate programs. We have a higher ratio of graduate to undergraduate students than most other universities in the country. This special emphasis on graduate education provides a strong culture of graduate studies on the campus and has engendered a number of innovative programs and teaching methods. Graduate programs on the Denver Campus also benefit from CU Denver's immediate proximity to the city, which provides rich opportunities for internships and employment, collaborations between the university and the city and a wealth of real-world problems that can test and elaborate ideas gained in the classroom.

The mission of the Graduate School is three-fold in support of the University, our students, the faculty, and our training programs.

1. **EDUCATION:** to enhance and advance outstanding educational experiences for all members of the university and the adjacent community through excellence in graduate education;
2. **INNOVATION:** to encourage and support excellence and innovation in research, creative and scholarly work;
3. **LEADERSHIP:** to recruit and train the next generation of highly educated leaders from diverse backgrounds to serve and lead in our communities, nation and the world

Not all post-baccalaureate programs at CU Denver|Anschutz fall under the auspices of the Graduate School. Programs that offer “professional” degrees that are independently accredited are overseen by their respective School or College.

For those Graduate Programs or Certificates that fall under the auspices of the Graduate School, the relevant administrative responsibilities are distributed between the central Graduate School office and the home School or College. The graduate programs that fall under the auspices of the Graduate School are listed in the Graduate School Policies and Procedures document found on the Graduate School website. Individual graduate programs are detailed in the school/college sections of this catalog.

## Graduate School Contacts

**Dean:** David Engelke, PhD

**Senior Associate Dean:** Inge Wefes, PhD

**Assistant Dean:** Shawna Cox, PhD

**Assistant Dean and Director, Recruitment:** Kristine Sikora, PhD

**Director of Graduate Admissions (Interim):** Kelly Santa Maria

**Student Progress Coordinator:** Stephanie Puello

**CEDC Application Specialist:** Allison Gus

**Office:** 1380 Lawrence Street, Suite 1251

**Telephone:** 303-315-2183

**Fax:** 303-315-5829

**Mailing Address:** P.O. Box 173364, Campus Box 163, Denver, CO 80217

**Website:** <https://graduateschool.ucdenver.edu>

## Admissions Requirements

Note that the following are minimum requirements. College and school regulations, if more stringent, take precedence over the minimum guidelines as set forth by the Graduate School.

### Regular Degree Students

Students are admitted by the Graduate School as regular degree students provided they meet the following criteria:

- Hold a baccalaureate or master's degree from an accredited college or university or demonstrate completion of work equivalent to the baccalaureate or master's degree given at CU Denver. Applicants whose credentials include studies or coursework at a College or University outside the USA (not taken as part of a semester abroad program) must include original transcripts and documentation in English (or certified English translation) of the transcript as evaluated by the CU Denver Office of International Affairs.
- Have an undergraduate grade point average of 3.00 or better ("A" is equal to 4.0) or a 3.00 or better GPA in twelve (12) credit hours or more of a partially completed graduate level Master's degree program. Applications from individuals who attended a College or University that does not issue grades or a GPA will be evaluated by the Graduate School on a case-by-case basis.
- Have adequate preparation to enter graduate study in the chosen program as demonstrated by their performance in the GRE or an appropriate substitute (i.e., MCAT, an earned MS/MA or PhD from a school in the United States, or completion of at least 12 credit hours of transferable graduate-level course work from an accredited US college or university). Although the Graduate School recommends that applicants take the GRE or other standardized tests, it is not a requirement for admission as a regular degree student if one of the other two indicators of preparedness is present. Some graduate programs, however, may require that all applicants take the GRE or an equivalent.
- Meet any additional requirements (such as particular undergraduate course work) for admission as established by the program.

International students must meet ALL of these requirements and also must provide:

- original transcripts and documentation in English (or a certified English translation) of the completion of a Bachelor's degree, Master's degree or the equivalent as evaluated by the CU Denver Office of International Affairs;
- financial and other documents as required by the International Student and Scholar Services Office to process immigration documents;
- a certified English translation of all academic records and references not in English, and
- evidence of proficiency in English as defined in the University policy Official Measures of English Language Proficiency for Admission of International Students (effective July 1, 2012) by satisfying one of the following criteria:
  - the applicant is a citizen of a country whose official language is English, which includes Australia, Belize, Botswana, Canada (except Quebec), Commonwealth Caribbean, Ghana, Great Britain, Ireland, Kenya, New Zealand, Scotland, Singapore, South Africa, and Zimbabwe; or
  - the applicant obtains a composite score of 75 or above on the Test of English as a Foreign Language (TOEFL, iBT) (minimum subscores of 15 in Reading, 15 in Listening, 19 in Speaking, and 20 in Writing) or a composite score of 6.5 or above on the International English Language Testing System (IELTS) (minimum



- subscores of 5.5 in each area). Schools or Colleges, or individual graduate programs may require higher standards on these tests; or
- the applicant has graduated from CU Denver's ESL Academy; or
  - the applicant has graduated with a bachelor's degree or higher from the United Kingdom or a US accredited school abroad where the language of instruction was English. (The applicant must provide a letter from the home institution verifying this information if the language of instruction is not clearly indicated on the official academic transcript.); or
  - the applicant has graduated with a bachelor's degree or higher from a US accredited school abroad where the language of instruction was English. (The applicant must provide a letter from the home institution verifying this information if the language of instruction is not clearly indicated on the official academic transcript.); or
  - the applicant has earned a bachelor's degree in the US or has successfully completed a minimum of 2 semesters (a minimum of 12 credits) of full-time study in a graduate-level master's program at an accredited institution in the US and obtained a "B" (3.00) cumulative GPA or higher.

Additional requirements and documentation may also be required.

## **Provisional Degree Students**

A Graduate Program that wishes to admit an applicant who does not meet the criteria for admission as a Regular degree student can petition the Graduate School to admit the applicant as a Provisional degree student. On the provisional form that accompanies the student's admission documents, the Graduate Program Director outlines the rationale to support such an admission. The form must include a description of the conditions that the student must meet in order to become a Regular degree student. The admission of the applicant as a Provisional degree student requires the approval of the Dean. Based on the requirements of the Graduate Program and the recommendations of the Graduate Program Director, the Dean will make a determination and advise the Program Director and the student of the conditions that the student must satisfy in order to be transferred from Provisional to Regular status. The Dean, in consultation with the Program Director, will also determine the time period (1 or 2 semesters for full-time students and a maximum of 4 semesters for part-time students) in which these conditions must be met. Provisional students are subject to the same standards of performance required of Regular degree students, plus any other requirements imposed by Program faculty as conditions of admission. At the end of the specified probationary period, the Dean, in consultation with the Program Director will review the performance of the Provisional degree student. Provisionally admitted students must either have satisfied the requirements for conversion and be admitted to Regular degree status or be dismissed from the Graduate Program to which they were provisionally admitted. The Graduate School will notify both the Program Director and the student whether the indicated requirements have been met and the student's status has been converted to that of a Regular student, or if the student failed to meet the requirements and has been dismissed.

# Application Procedures

## New Degree-Seeking Students

Applicants seeking admission to CU Denver's graduate programs should apply online at:

<http://www.ucdenver.edu/academics/colleges/Graduate-School/prospective/Pages/apply.aspx>

International applicants should refer to the Information for International Students chapter for more information regarding specific application instructions and requirements.

If applying to more than one program, you must submit a complete application and separate fee to each program.

Students transferring from another University of Colorado campus to the Denver Campus must apply and be accepted by the program on this campus.

A student who has completed a master's program at CU Denver must resubmit an online graduate application for acceptance into a doctoral program.

An applicant for admission must present:

- Submitted online application
- Official transcripts for all academic work in colleges and universities completed to date.
- Three letters of reference. The online application will automatically send recommendation forms to the recommenders indicated on the application.
- A nonrefundable application fee of \$50 for domestic students or \$75 for international students. *No application will be processed until this fee is paid.*
- Any other material required specifically by the program faculty. This may include scores from the GRE or other examination (GRE School code 4875). Check with program coordinators in the departments for additional information that may be required.

*Check with the program for the deadline for submitting the application.*

Students who wish to apply for a graduate student award (e.g., fellowship, scholarship, assistantship) should contact their department before the application deadline for information, since deadlines are usually earlier for aid requests than for admission.

## Nondegree-Seeking Students

A student who wishes to take graduate courses, but is not interested in earning a specific advanced degree, may apply as a nondegree student at:

<http://www.ucdenver.edu/academics/colleges/Graduate-School/prospective/Pages/apply.aspx>

Nondegree students will be allowed to register only on the campus to which they have been admitted.

Nondegree students who later desire to pursue a graduate degree program at this university are encouraged to submit the complete online graduate application and supporting credentials as soon as possible. Credits earned as a nondegree student at the University of Colorado may, at the discretion of the department to which the student is admitted, be transferred into a degree program. The maximum amount of credits allowed for transfer is 12 semester hours for the master's degree, 9 hours for the EdD program, and 30 hours for PhD degrees. These limit totals include both nondegree CU credits and those transferred from other institutions.

## **Certificate Students**

The application for students wishing to matriculate into a Graduate Certificate Program is completed online at <http://www.ucdenver.edu/academics/colleges/Graduate-School/prospective/Pages/apply.aspx>.

In addition to the online application, official transcripts from Colleges, Schools, and Universities in which the student received a degree are required. Individual Certificate Programs evaluate and select the students they want to admit. A letter of offer from the Certificate Program to the applicant must include a statement indicating that admission to the University is pending final approval of the Graduate School. The Graduate School confirms the applicant's credentials, including authenticating transcripts, and also determines whether the student meets the general requirements of the Graduate School and the specific requirements of the selected Certificate Program. Students admitted to a Certificate Program must meet the same admission criteria as outlined above for degree-seeking students.

Students who are already enrolled in a Graduate Degree Program in which a Certificate is also offered may be admitted into the Certificate Program upon approval of the Program Director and the Graduate School.

## **Readmission of Former Students**

Students who were previously admitted to a Graduate Program but who did not complete that degree program and who have not been registered for more than one (1) year [i.e., three (3) terms] at CU Denver|Anschutz must reapply to the Program supplying updated information and academic credentials. The following requirements must be satisfied before being readmitted:

- clarify their status with the Graduate Program and Graduate School to determine their eligibility to return and pursue the same degree;
- submit an application at least two weeks prior to the first day of the term in which you are interested in taking a course; and
- meet any new admission requirements required of matriculants (i.e., background checks, immunizations, etc.)

However, the Program is under no obligation to readmit the student, and the student should consult with the Program Director before applying.

## **Transferring Programs**

Students who are currently enrolled in a Graduate Program and in good academic standing (i.e., GPA of 3.00 or better) and who want to change Programs or major departments must complete the appropriate application forms and be accepted by the new Program into which they are transferring. The Graduate School maintains a current form for such transfers at [www.ucdenver.edu/graduateschool](http://www.ucdenver.edu/graduateschool).

## **New Student Orientation**

An orientation program for new students is held prior to the start of the fall semester. The orientation program provides information to new students about activities and services available on the Denver Campus. Information on the expectations, opportunities, registration process, parking and securing ID cards is also provided. Academic advising sessions are held before registration for the term. Students should contact their schools and colleges for additional information on advising, as well as special orientation sessions that may be scheduled for their programs.

## **Assistantships and Fellowships**

### **Graduate Student Teaching Appointments**

Many departments employ graduate students as part-time instructors or teaching assistants. The instructorship is reserved for those advanced graduate students already possessing appropriate degrees who may be independently responsible for the conduct of a section or course. Contact the department for further information.

### **Research Assistantships**

Research activities provide opportunities for graduate students to obtain part-time work as research assistants in many departments. Such assistantships are funded by external grants obtained by faculty members. Contact the department for further information.

## **Requirements for Graduate Degrees**

### **Graduate Student Handbooks**

The Graduate School provides the Graduate School Policies and Procedures that provides information and guidelines for graduate students at the University of Colorado Denver. Students are encouraged to be familiar with the policies outlined in this handbook and to use this handbook as a supplement to the personal feedback and guidance of faculty and staff in their departments.

Each graduate program is expected to provide students with a program-specific handbook indicating in some detail the curricular requirements, the expectations for satisfactory progress toward the degree completion, a timeline for the steps needed to meet these expectations and other features unique to each program (such as the composition and formation of thesis, project and dissertation committees to guide and review the student's progress).

## **GPA Requirements and Quality of Graduate Work**

To maintain satisfactory academic progress, advance to candidacy, and earn a certificate or graduate degree, students are required to maintain a minimum cumulative GPA of 3.00 for all graduate courses taken while in Graduate School, including any undergraduate (i.e., 4000 level) courses that may be required for the certificate program or graduate degree. Failure to maintain a 3.00 cumulative GPA will result in the student being placed on academic probation, as defined below. Courses in which grades below "B-" (2.7) are received may not be applied toward fulfillment of the requirements for any graduate (PhD or Master's) degree or certificate. Courses required by the degree-granting program or certificate in which the student receives a grade below B- must be retaken in order to achieve a B- or better grade. However, all grades received, including repeat courses, will appear on the student's transcript and will be included in the GPA calculation, but only one course enrollment may be counted towards graduation credits.

## **Transfer Credits**

A limited amount of high-quality resident graduate work done in a recognized graduate school elsewhere, or as a nondegree student at a University of Colorado campus, within the time allowed may be accepted, provided it is recommended by the department concerned and approved by the school or college dean. The maximum amount of work that may be transferred to this university is 12 semester hours for the master's degree, 9 hours for the EdD degree, and 30 hours for PhD degrees.

Courses taken as pass/fail or satisfactory/unsatisfactory will not be transferred. In addition, a grade of B- or above must be earned for a course to be transferred (individual programs may require a B or better for transfer credit and/or may require a B or better in the core classes of the particular discipline). Courses taken more than 7 years ago will need to be validated by the program director.

## **Certificate Program**

The minimum number of credit hours required for a Graduate Certificate is nine (9), although twelve (12) credit hours are strongly recommended, which is more in line with national norms. While it is expected that most of the coursework will be at the graduate level (5000 or above), no more than 3 credits may be earned at the undergraduate level

(4000 level only), and which requires the approval of the Certificate Program Director. All graduate level certificate courses (5000 or above) will be eligible for transfer into a subsequent Graduate Degree Program assuming they meet the minimum grade requirements of the Graduate Program (which may be more stringent than the Graduate School Rules), the classes are deemed appropriate for the specific Program of study, and are approved for transfer by the Graduate Program Director.

## **Admission to Candidacy**

Students who have completed the coursework required for a Graduate Certificate must apply for a Certificate of Completion. This form is available in the Graduate School and online and must be signed by the Certificate Program Director prior to submission to the Graduate School for final approval and filing. The form has to be submitted to the Graduate School no later than the posted graduation deadline during the semester in which a student plans to have their Certificate awarded. An approved form certifies that i) student's coursework is satisfactory, ii) that the Certificate Program curriculum described on the form meets the requirements of the Graduate School as well as the particular Certificate, and iii) that the student is eligible for the Certificate. Students cannot receive their certificate if they have a cumulative GPA of less than 3.00 in the certificate coursework.

## **Master's Degree**

The requirements stated below are minimum requirements; additional conditions may be set by the individual programs.

Students planning to graduate should obtain current deadlines from [www.ucdenver.edu/graduateschool](http://www.ucdenver.edu/graduateschool). It is the graduate student's responsibility to see that all requirements and deadlines are met (e.g., changing of *I* and *IP* grades, notification of final examinations, etc.).

## **Minimum Requirements**

The minimum number of credit hours required for a Master's degree is thirty (30). While it is expected that most of this coursework will be at the Graduate level (5000 and above), some Graduate Programs may allow specific undergraduate courses (4000 level and above) that are outside the specific discipline of their program to count towards the graduate degree and must be approved by the Program Director. Regardless, at least 24 credit hours of those required for completion of the Master's program must be at the graduate level (5000 and above) and undergraduate credits (4000 level and above) cannot exceed 20% of total credit hours required. Furthermore, undergraduate courses within the same discipline as the Graduate Program cannot be credited towards a graduate degree. If the program has a thesis, research paper or internship option as the culminating requirement, the thesis/research paper must count for three to six (3-6) credits, unless specified otherwise by individual programs. Independent study coursework cannot exceed 20 percent (6 credits) of the 30 credits of coursework required for the Master's degree.

## **Master's Thesis Credit**

Master's students who are enrolled in a program or track that requires a thesis, must also register for a minimum of three and a maximum of six hours of thesis work. Once all required semester hours of thesis work have been taken and all other course work is completed, students may register for Candidate for Degree (CAND 5940) for the semester in which they will defend their thesis. CAND 5940 carries no credit or grade, but students pay for one credit of resident tuition and minimal fees. Students may only enroll in this course once during their final semester. Students registered for the Candidate for Degree course will be considered full-time for financial aid and enrollment verification purposes.

## **Thesis Requirements**

Students who are enrolled in a program that requires a thesis must undertake their thesis work under the supervision of a thesis advisor and a faculty advisory committee. All research conducted for a master's degree must meet all appropriate regulatory standards specified by federal, state and local agencies regarding ethical research, animal use, human subjects, HIPAA and environmental safety. Each thesis is presented in partial fulfillment of the requirements for the master's degree and must meet the formatting criteria outlined in the Style and Policy Manual for Theses and Dissertations, available on the Graduate School webpage. The Graduate School performs format review and approval for all theses prior to electronic submission. Theses must be successfully defended before the student's committee before final submission.

A grade of In Progress (*IP*) will be assigned for thesis hours in all semesters until the final approved thesis is submitted to the Graduate School office. The thesis advisor determines the final thesis grade and then submits Change of Record forms to the Graduate School office to change all *IP* grades to this final grade.

## **Admission to Candidacy**

Students who wish to receive the master's degree must first become candidates. After completing or registering for all program-required course work, students must apply for graduation in their student portal and submit the signed Application for Admission to Candidacy to the Graduate School, by the graduation deadline posted for the semester in which they plan to graduate. The candidacy form is available online on the Graduate School website.

An approved form certifies that a student's work is satisfactory and that the program curriculum entered on the candidacy form meets all of the requirements of both the Graduate School as well as the particular graduate program, and that the student is a candidate for the degree. Students must have a minimum GPA of 3.00 to apply for candidacy.

## **Master's Degree Final Examination / Thesis Defense**

All candidates for the master's degree are required to take a final comprehensive examination, present a cumulative professional portfolio or successfully defend a project or thesis. The final examination or defense is conducted by a committee consisting of at least three members of the graduate faculty. The student's final examination/defense committee and the examination schedule must be approved by the program director. The Request for Graduate Examination form must be submitted to the Graduate School at least two weeks prior to the final exam/defense.

The examination or defense may be oral, written or both, or may consist of an evaluation of the cumulative professional portfolio. The chairperson and student must be present for the oral examination or defense, but a minority of members of the committee may participate by interactive video. If *one* faculty member cannot be present due to an *emergency*, the exam can proceed with the faculty who can attend, and the student will schedule a separate meeting with the absent faculty member at an alternate time. A majority of the examination committee members must vote for one of the following examination outcomes: Pass, Conditional Pass or Fail. The original signed form is sent to the student's respective school or college, or to the Graduate School.

For a Conditional Pass, the examining committee will clearly define the requirements for the student to receive an unconditional passing grade; these requirements must be completed to the satisfaction of the examination committee within four months. Failure to satisfy these conditions will result in failure of the examination. A student who fails the examination is subject to immediate dismissal from the program on the recommendation of the graduate program and concurrence of the dean.

A student who fails the examination is subject to immediate dismissal from the Program on the recommendation of the Graduate Program Director and concurrence of the Dean. At the program's discretion, a student who fails the examination may be allowed to retake the exam once. The retake must be completed by the end of the next academic semester. Both the original signed examination form noting the failure as well as the signed new exam form for the retake must be filed with the Graduate School.

## **Time Limit**

Master's students, whether enrolled full time or part time, have 7 years from the start of course work to complete all degree requirements, including the filing of the thesis with the Graduate School if the program requires a thesis. Students who fail to complete the degree in this seven-year period are subject to termination from the Graduate School upon the recommendation of the program director and concurrence of the Graduate School dean. For a student to continue beyond the time limit, the program director must petition the dean for an extension and include: 1) reasons why the program faculty believe the student should be allowed to continue in the program, and 2) an anticipated timeline for completion of the degree.

## **Doctoral Degree**



Students who receive a doctoral degree must demonstrate that they are proficient in some broad subject of learning and that they can critically evaluate work in this field. Furthermore, they must have shown the ability to work independently in their chosen field and must have made an original contribution of significance to the advancement of knowledge. The technical requirements stated below are minimum requirements for all candidates for the degree; additional conditions set by the departments or schools will be found in the announcements. Any department may make additional regulations consistent with these general rules.

## **Minimum Requirements**

The minimum number of credit hours required for a PhD degree is thirty (30) credits of coursework, all of which must be at the Graduate level (5000 and above) and thirty (30) dissertation credits. For the EdD program, the minimum credit hours required is thirty-nine (39) credits of coursework and fifteen (15) credits of dissertation. The PsyD program requires a total of ninety-four (94) credit hours, including four (4) hours of Externship, eight (8) hours of Internship, and four (4) hours of a capstone project. Graduate level coursework taken for a Master's degree may be applied toward a doctoral degree with Program approval.

All courses that count towards the minimum requirements for a doctoral degree must be at the graduate level; including graded on the A-F system (not pass/fail) and offered within a Degree Program at the 5000 level or above. With the approval of the Program Director, students enrolled in Graduate Programs at CU Denver|Anschutz can undertake graduate-level courses at other campuses within the University of Colorado system.

The minimum enrollment requirement at CU Denver|Anschutz for doctoral students is six (6) semesters of full-time scholarly work beyond the attainment of a bachelor's degree.

After completing all course work required by their doctoral program (a minimum of 30 hours), PhD students must register for at least 30 semester credit hours of dissertation (excluding students in the clinical health psychology doctoral program) to complete the requirements for the PhD degree. PhD students must register for a minimum of 5 hours (and a maximum of 10 hours) of dissertation credit in each fall and spring semester following successful completion of the comprehensive examination.

Once a student has completed 30 dissertation credits, they need to enroll for only one credit in each fall and spring semester until a successful defense of their dissertation. If defending in the summer semester, they must also register for one dissertation credit.

A grade of In Progress (*IP*) will be assigned in all semesters until the final approved dissertation is submitted to the Graduate School office. The dissertation advisor determines the final dissertation grade, and then submits Change of Record forms to the Graduate School office to change all *IP* grades to this final grade.

## **Registration Requirements**

A student (who is not on a leave of absence) who fails to register continuously in a given academic year (fall and spring semesters) for dissertation credit hours after passing the comprehensive examination may, at the discretion of the program director, be required to retake and pass the examination in order to regain status as a student in “good standing.”

Students who are unable to register for the minimum dissertation credits because of extenuating personal circumstances should apply for a leave of absence.

### **Leave of Absence**

Students who need to leave a CU Denver|Anschutz Graduate Program for a period of time should determine in consultation with their Program Director whether a petition for leave of absence is required for up to one (1) year. If approved by the Program Director and the Dean of the Graduate School, a copy of the Leave of Absence form is forwarded to the Registrar's Office. The original is retained in the student's file. Approved leaves of absence do not automatically extend the time limits for earning a degree or certificate, but they may be cited as supporting documentation to request an extension if needed. Requests for leaves of absence that exceed one (1) year will not be approved unless the Program Director provides the Dean with a compelling justification why such action should be approved. Students who are absent for longer than one (1) year will be considered to have withdrawn from the Program and will be required to reapply for admission and be considered with all other applicants.

### **Examinations**

Each PhD program will require at least comprehensive and final examinations. Notice of all examinations must be filed with the Graduate School at least two weeks prior to administration.

#### **Preliminary Examination**

Each program is responsible for ensuring that students are qualified for doctoral study by successfully passing a preliminary examination. Graduate programs that require students to have a master's degree before they enter their PhD program may exempt the student from taking a preliminary exam. The preliminary exam must occur within three semesters of completing the required courses as defined by the particular graduate program. The content and format of the preliminary examination are determined by the individual graduate program. The results (Pass/Fail) of the preliminary examination must be reported to the Graduate School. A student who fails the examination is subject to immediate dismissal from the Graduate School upon the recommendation of the program and concurrence of the dean; however, the preliminary exam may be retaken once at the program's discretion.

#### **Comprehensive Examination**

After completing or registering for all required program course work, and concurrent with applying for admission to candidacy for the PhD, students must take a comprehensive examination in their respective discipline. This exam will test a student's mastery of a broad field of knowledge, not merely the formal course work that s/he has completed. The oral part of the comprehensive exam is open to all members of the graduate faculty. This examination must be completed no later than the end of the third year for full-time students (fourth year for students enrolled in the PhD programs in applied mathematics and computer science and information systems). Individual programs may establish an earlier deadline.

The student's comprehensive examination committee and the examination schedule must be approved by the program director. The Request for Graduate Examination form must be submitted to the Graduate School at least two weeks before the exam. The examination committee consists of a minimum of three graduate faculty members; the chair of the committee must be a member of the degree-granting program. The student's dissertation advisor, if already identified, may *not* chair the examination committee. All members of the committee must be present for the examination, although a minority of members, but not the chairperson or the student, may participate by interactive video. If *one* faculty member cannot be present due to an *emergency*, the exam may proceed with the faculty who can attend, and the student will schedule a separate meeting with the absent faculty member at an alternate time. The student must receive votes from the majority of the examination committee for one of the following outcomes: Pass, Conditional Pass or Fail. The examination form must be signed by the committee and returned to the Graduate School office.

If a student receives a Conditional Pass, the examining committee will clearly define the requirements for the student to receive an unconditional passing grade, and these requirements must be completed to the satisfaction of the examination committee within four months. The committee chair is responsible for monitoring the conditions and reporting their outcome to the Graduate School. Failure to satisfy these conditions will result in failure of the examination.

A student who fails the comprehensive examination is subject to immediate dismissal from the Graduate School upon the recommendation of the program and concurrence of the dean; however, the exam may be retaken once at the program's discretion. The retake will be in the form designated by the committee and must be completed within twelve months. The original examination form noting the failure is signed by the committee and returned to the Graduate School office. New examination forms will be generated when the examination is rescheduled. Students will be required to meet registration requirements and be registered during the term in which the repeated exam is taken.

### **Final/Dissertation Examination**

After the dissertation has been completed, a final examination on the dissertation and related topics is conducted in two parts, an oral presentation of the dissertation research that is open to the public, and a closed examination conducted by the examining committee.

The program director will approve the student's final examination/defense committee and the examination schedule. The Request for Graduate Examination and Biosketch forms must be submitted to the Graduate School at least two weeks before the exam. The Graduate School office will send the final examination signature form to the program office to be placed in the student's file for use at the exam.

The dissertation defense committee consists of a minimum of four graduate faculty members. The chair of the committee must be a member of the degree-granting program. The student's dissertation advisor may not chair the examination committee. The student must submit finalized draft copies of the thesis to the defense committee at least two weeks before the examination date; some programs may require an earlier deadline.

All members of the committee must be present for the examination although a minority of members, but not the chairperson or the student, may participate by interactive video. If *one* faculty member cannot be present due to an *emergency*, the exam may proceed with the faculty who can attend, and the student will schedule a separate meeting with the absent faculty member at an alternate time. The examination form must be signed by the committee and returned to the Graduate School office. The student must receive votes from a strict majority of the examination committee for one of the following outcomes: Pass, Conditional Pass or Fail.

If a student receives a Conditional Pass, the examining committee will clearly define the requirements for the student to receive an unconditional passing grade, and these requirements must be completed to the satisfaction of the examination committee within 60 days of the defense. Under extenuating circumstances, the graduate program director may petition the Graduate School for additional time. If a student fails the examination, s/he may not continue in the program.

## **Dissertation Requirements**

A dissertation based upon original investigation and showing mature scholarship and critical judgment, as well as familiarity with the tools and methods of research, must be written on a subject approved by the student's dissertation advisor and the dissertation advisory committee. All research conducted for the PhD degree must meet all regulatory standards specified by federal, state and local agencies regarding ethical research, animal use, human subjects, HIPAA and environmental safety.

After selecting a dissertation advisor, the student, in collaboration with his or her dissertation advisor, will choose a Dissertation Advisory Committee, subject to the approval of the Graduate Program Director. Although it is recommended that the Dissertation Advisory Committee be the same as the Dissertation Examination Committee, the two committees need not be identical. Although the student's dissertation advisor may not chair the Comprehensive or Dissertation Examination Committees, Programs are given the flexibility to permit, or prohibit, the student's advisor to serve as Chair of the Dissertation Advisory Committee. The Dissertation Advisory Committee will serve an advisory function to the student and dissertation advisor and will also monitor the student's progress towards completing the dissertation. The Dissertation Advisory Committee will determine when the student has made sufficient progress to begin writing his or her

dissertation. All PhD students who have advanced to candidacy must meet with their Dissertation Advisory Committee at least once every year, although some Programs may require - and the Graduate School encourages - a greater frequency of meetings. It is the student's responsibility to identify the best available time and schedule the meeting. The Dissertation Advisory Committee shall evaluate the student's progress to ensure that s/he has made satisfactory progress since the previous meeting. The Committee Chair will complete the Dissertation Advisory Committee meeting form summarizing the student's progress, or lack thereof, and send copies to the student, the primary mentor if not the Chair, the Program Director and the Graduate Dean. In case of non-satisfactory performance, steps to be taken to rectify the situation should be suggested in the report. If a student fails to meet with their Dissertation Advisory Committee within the previous 12 months, the Graduate School will notify the student and dissertation advisor that the committee must meet within the next four (4) weeks. Students who fail to have a Dissertation Advisory Committee meeting by the end of this four (4) week probationary period will not be permitted to register for subsequent semesters. Once the student is in compliance with this rule, s/he will be permitted to register.

The student's dissertation must meet the formatting criteria outlined in the Style and Policy Manual for Theses and Dissertations, available on the Graduate School webpage. The Graduate School performs format review and approval for all dissertations prior to electronic submission. The formally approved dissertation must be submitted electronically, with the appropriate supporting documentation, within 60 days of the successful dissertation defense. Dissertation fees are paid upon submission online.

## **Time Limit**

Doctoral students, whether enrolled full time or part time, must complete all degree requirements within eight years of matriculation. Students who fail to complete the degree in this eight-year period are subject to termination from the Graduate School upon the recommendation of the program director and concurrence of the Graduate School dean. For a student to continue beyond the time limit, the program director must petition the dean for an extension and include: 1) reasons why the program faculty believes the student should be allowed to continue in the program and 2) an anticipated timeline for completion of the degree. Approved leaves of absence do not automatically extend the time limits for earning a degree, but they may be used as a reason to request an extension if needed.

# **INTERNATIONAL ADMISSIONS**

## **International Admissions**

CU Denver's International Admissions unit collaborates with our schools and colleges to facilitate the admission process for international graduate students. International students are students who currently have or will require a temporary, non-immigrant visa to study in the United States.

We also evaluate international academic credentials for US citizens, permanent residents, and other applicants who have studied outside the United States before studying at CU Denver.

This page contains information for international applicants to graduate programs. For information about applying to an undergraduate program as an international student, please visit this page.

**Physical Address:** Student Commons Building, Suite 1119, 1201 Larimer Street, Denver, CO 80204

**Mailing Address:** Campus Box A005/1001, PO Box 173364, Denver, CO 80217-3364

**Telephone:** +1 (303) 315-2382

**Email:** [application@ucdenver.edu](mailto:application@ucdenver.edu)

**Website:** <http://internationaladmissions.ucdenver.edu>

## **Application Information for Graduate International Students**

### **Application and Documentation Requirements**

Please review the Graduate Admissions page for information about transcripts. Make sure to visit the website for your program of interest to find the list of required documents and test scores for your major. If you have any questions, International Admissions is here to help - please feel free to contact us at any time.

**Note:** the application fee for international applicants is \$75.

### **Proof of English Language Proficiency**

International applicants to CU Denver must provide proof of English language proficiency (ELP) in order to be considered for full admission. Some graduate programs will consider international applicants for conditional admission if they apply without adequate proof of ELP. Contact International Admissions if you have questions about ELP or conditional admission.

You may meet the ELP requirement via any of the options listed below.

#### **1. Citizenship Exemption**

International applicants holding citizenship from the following countries do not need to prove their English language proficiency for admission to CU Denver. The Spring 2021 list is based on the United Kingdom government's list of countries exempt from proving English ability when applying for a UK student visa.

<b>Fall 2020 Admission</b>	<b>Spring 2021 Admission</b>
<ul style="list-style-type: none"><li>• Australia</li><li>• Belize</li><li>• Canada (except Quebec)</li></ul>	<ul style="list-style-type: none"><li>• Antigua &amp; Barbuda</li><li>• Australia</li><li>• The Bahamas</li></ul>

<ul style="list-style-type: none"> <li>• Commonwealth Caribbean</li> <li>• Ghana</li> <li>• Ireland</li> <li>• Kenya</li> <li>• New Zealand</li> <li>• Singapore</li> <li>• South Africa</li> <li>• Zimbabwe</li> <li>• United Kingdom</li> </ul>	<ul style="list-style-type: none"> <li>• Barbados</li> <li>• Belize</li> <li>• Canada</li> <li>• Dominica</li> <li>• Grenada</li> <li>• Guyana</li> <li>• Ireland</li> <li>• Jamaica</li> <li>• New Zealand</li> <li>• Saint Kitts &amp; Nevis</li> <li>• Saint Lucia</li> <li>• Saint Vincent &amp; the Grenadines</li> <li>• Trinidad &amp; Tobago</li> <li>• United Kingdom</li> </ul>
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## 2. ESL Academy

International applicants may meet the English language proficiency requirement for any program of study at CU Denver by successfully completing every class in level 5 at CU Denver's ESL Academy.

## 3. English Language Proficiency Tests

CU Denver accepts the following tests as proof of English language proficiency.

**Note:** The scores listed below are the university minimum requirement. Some graduate programs require higher scores for admission. Please visit the website for your program of interest for more information.

### Minimum Score Requirements:

#### TOEFL iBT

CU Denver school code: 4875

CU Denver accepts TOEFL MyBest scores.

Comprehensive Score	Fall 2020 Admission	Spring 2021 Admission
	75	79

Subscores	Fall 2020 Admissions	Springs 2021 Admission
Reading	15	18

<b>Listening</b>	15	17
<b>Speaking</b>	18	20
<b>Writing</b>	17	17

### IELTS ACADEMIC

CU Denver accepts super-scored IELTS scores.

<b>Overall Band Score</b>	<b>Fall 2020 Admission and Spring 2021 Admissions</b>
	6.5

<b>Subscores</b>	<b>Fall 2020 Admission and Spring 2021 Admissions</b>
<b>Reading</b>	5.5
<b>Listening</b>	5.5
<b>Speaking</b>	5.5
<b>Writing</b>	5.5

### PTE ACADEMIC

<b>Overall Score</b>	<b>Fall 2020 Admissions</b>	<b>Spring 2021 Admission</b>
	51	58
<b>Subscores</b>	<b>Fall 2020 Admission</b>	<b>Spring 2021 Admission</b>
<b>Reading</b>	44	42
<b>Listening</b>	44	42
<b>Speaking</b>	49	42
<b>Writing</b>	47	42

### DUOLINGO ENGLISH TEST

International Admissions is currently piloting the Duolingo English Test for use in undergraduate admissions (except Nursing). Please contact International Admissions for more information.

Total Score	<u>Fall 2020 Admission and Spring 2021 Admission</u>
	160-point scale (test dates starting July 15, 2019): 105 100-point scale (test dates prior to July 15, 2019): 48



**Note:** The Duolingo English Test currently does not report sub-scores. International Admissions reserves the right to update our minimum requirements in the event that Duolingo starts reporting sub-scores.

#### **4. Coursework Completion**

International applicants who have completed the following coursework will be considered to have met the English language proficiency requirement.

##### Fall 2020 Admission:

A. The applicant has earned a bachelor's degree in the United States.

OR

B. The applicant has successfully completed of 2+ semesters in a graduate degree program in the United States.

##### Spring 2021 Admission:

A. The applicant has earned a bachelor degree in the United States; or has earned a post-secondary qualification, comparable to a US bachelor degree, in one of the exempt countries listed above; or has earned such a qualification at an institution accredited by an exempt country but located in a non-exempt country.

OR

B. The applicant has completed 12 or more semester hours of coursework in a master or doctoral degree program in the United States with an overall GPA of 3.0/4.0 or higher; or has completed a comparable amount of graduate coursework with a comparable GPA in one of the exempt countries listed above; or has completed such coursework at an institution accredited by an exempt country but located in a non-exempt country.

### **Application Deadlines**

Application deadlines vary significantly. Please contact your program of interest to learn more.

### **Immigration Process**

International Services Specialists in International Student & Scholar Services (ISSS) handle the immigration process for international students. ISSS will issue an immigration document (Form I-20 or Form DS-2019) to you, if applicable, only after you have confirmed your acceptance and submitted the Immigration Clearance Form (see below).

You will be contacted within five (5) business days of receiving your decision letter and will need to provide:

1. **Proof of Financial Support:** If you have already sent financial documents to the International Admissions Office, that information will be forwarded to ISSS. If you have not already provided this information, or if your information needs to be updated, you will have an opportunity to provide ISSS with your proof of financial support when you complete the online Immigration Clearance Form that your International Services Specialist will send to you.
2. **Passport/Visa Information:** If you have already sent this information to International Admissions, it will be made available to ISSS who will contact you if they need more information.

*Note: International students living outside of the U.S. will need to provide a copy of their passport, if it has not already been sent. Those living in the U.S. should be prepared to submit a copy of their passport, visa, Form I-94 Arrival/Departure Record and Form I-20, Form DS-2019, or Form I-797 (if applicable). In all correspondence, please use your name as it appears on your passport.*

Please visit ISSS for more information on Pre-Arrival, Arrival at CU Denver, I-20/DS-2019 Timeline, and more.

# BURSAR AND FINANCIAL AID & SCHOLARSHIPS INFORMATION

*At CU Denver, we have a longstanding belief that finances should never stand in the way of motivated, talented individuals who want to better themselves and make a positive impact on the world around them. Through a tradition providing strong financial assistance and aid programs, we enforce this belief every day.*

## **FAQ's**

Not sure of the difference between student services offices? Here's a quick guide to finding what you need.

## **Admissions**

1380 Lawrence Street Center, Room 1251

303-315-2183

<https://graduateschool.ucdenver.edu/admissions>

Application: pick up, drop off, application fee payment, application/ admission status

Residency forms for students applying to CU Denver for the first time

Information about establishing domicile for tuition classification

Information about CU Denver

## **Bursar**

**Bursar:** Vacant (**Associate Bursar** - Eric Gray)  
**Office:** Student Commons Building Suite 5123  
**Customer Service Phone Center:** 303-315-1800  
**E-mail:** bursar@ucdenver.edu  
**Website:** www.ucdenver.edu/bursar  
**Front Counter:** Student Commons Building 5123  
**Customer Service Manager:** Debra Dorsey  
**Telephone:** 303-315-1820

- Application Fees Payments
- College Opportunity Fund
- Departmental Deposit Transactions
- Tuition and Fee Payments
- Refunds and Direct Deposits
- Student Account Reconciliation
- Third-Party Billing

## **Financial Aid & Scholarships**

Student Commons Building Suite 5105  
303-315-1850

- How to apply for financial aid
- Free Application for Federal Student Aid (FAFSA) <https://fafsa.ed.gov/>
- Work-study and student employment opportunities
- Grant and student loan information
- Special circumstances, academic progress or financial hardship appeals
- Scholarships Information

## **Registrar**

Student Commons Building Suite 5005  
303-315-2600

- Academic Calendar
- Catalog
- Degree Audit
- Diplomas
- Enrollment Verification
- Grades and Academic Standing
- Name and Record Update Form
- Registration including Inter-Campus and Inter-Institutional
- Residency Petition Forms for Continuing Students
- Schedule Adjustment Forms

- Transfer Credit Evaluation
- Transcripts

## **Student Debt Management**

Student Commons Building Suite 5123  
Customer Service Phone Center: 303-315-1800

- Past-Due Tuition Collection
- Student Loan Processing

## **Student Commons Building**

### **Physical Location:**

1201 Larimer Street

Denver, CO 80204

The Student Commons Building is located on Auraria Campus at the corner of Larimer and Speer.

### **Mailing Address for Student Payments:**

University of Colorado Denver | Anschutz Medical Campus

Bursar's Office

Mail Stop A098

13120 E. 19th Ave, Room 3120A

Aurora, CO 80045

## **Financial Aid & Scholarships**

**Director of Financial Aid & Scholarship Office:** Justin Jaramillo

**Office:** Student Commons Building, 5105

**Telephone:** 303-315-1850

**E-mail:** [financialaid@ucdenver.edu](mailto:financialaid@ucdenver.edu)

**Website:** [www.ucdenver.edu/finaid](http://www.ucdenver.edu/finaid)

## **Student Financial Aid Information**

The Financial Aid & Scholarships Office delivers more than \$128 million in financial aid awards to qualified students at the Denver Campus each year. Graduate Students will be

considered for a financial aid award primarily made up of student loans. Some work-study funding is available to graduate students as well.

## **Applying**

To be considered for financial aid, students should complete the (*Free Application for Federal Student Aid*) FAFSA annually. The application becomes available October 1 of each year for the upcoming year's funding. Upon completing the application, students should monitor their email provided on the FAFSA, University email, and UCDAccess portal To Do List for requests for follow up paperwork. To be considered for a financial aid award, all requested documents must be received and accepted by the Financial Aid & Scholarship Office. Students may also obtain important information online at [www.ucdenver.edu/finaid](http://www.ucdenver.edu/finaid). All financial aid policies and procedures are subject to change due to revisions in federal and state laws, regulations, guidelines and applicable institution policies.

## **Awards**

Students are informed by University email when awarded financial aid. The email notice advises students to review their award on the UCDAccess portal. Financial aid awards should be available for review approximately four to six weeks after all application materials have been accepted. The information provided will include types of award and amount of aid awarded.

## **Eligibility**

Each student must meet the following eligibility criteria to qualify for financial aid:

1. Be a U.S. citizen or eligible noncitizen.
2. Have a valid social security number (exceptions for students from the Republic of the Marshall Islands, Federated States of Micronesia, or the Republic of Palau).
3. Be classified as a degree-seeking student by the University of Colorado Denver Office of Admissions
4. Be enrolled at least half-time (3 credits hours for graduate students).
5. Meet financial aid Satisfactory Academic Progress (SAP) standards.
6. Not be in default on any student loan or owe a refund on any educational grant.
7. Male applicants must be registered with the Selective Service.
8. Sign the statement of educational purposes on the FAFSA application.

## **Qualifying**

Financial Aid eligibility is largely based on the concept of financial need. Financial need is calculated as the Cost of Attendance (tuition, fees, books, and living expenses) minus the Expected Family Contribution or EFC (student/spouse contributions and parents' contribution for dependent students). A student's EFC is assigned directly from the information provided on the FAFSA application.

Cost of Attendance is the estimated annual cost to attend CU Denver, including tuition and fees, room, board, books and supplies, transportation and personal expenses. The Financial Aid & Scholarships Office determines standard COA based upon average tuition and fees charged and other items established by the Colorado Department of Higher Education. Current COA figures are available on the website [www.ucdenver.edu/finaid](http://www.ucdenver.edu/finaid).

The EFC from the student and spouse (if applicable) are calculated by a standardized formula that is determined by data provided on the FAFSA and is required by federal law. The formula considers income, savings and other assets, family size, number of children in postsecondary school and other factors and then assigns a student an EFC.

Financial Aid is intended to supplement and not replace financial contributions from the student/spouse. If the EFC is equal to or greater than the COA, then the student will not qualify for need-based financial aid, but can still receive non-need based financial aid such as Federal Direct Unsubsidized Loans or Federal Direct Graduate PLUS Loans up to but not exceeding their COA. Direct Unsubsidized Loans and Direct Graduate PLUS Loans comprise the majority of all graduate students' financial aid awards regardless of financial need.

## Enrollment Status

Most graduate financial aid programs require at least half-time enrollment (3 credit hours per semester) to be eligible for awards.

**Notice for Graduate Students:** The financial aid definition of half-time enrollment may differ from the academic definition of half-time enrollment based on degree programs. See a financial aid advisor for more information.

## Grants, Loans and Work-Study

### Grants:

1. **Colorado Graduate Grant (CGG)** - CGG is a state funded grant program. High-need students (determined by the FAFSA) studying Science, Technology, Engineering or Math (STEM) are considered for the award, however it is not guaranteed. To be considered for this grant, students must be residents of the state of Colorado and enrolled in a minimum of 4 credit hours per semester. Amounts vary each year depending on funding and the number of eligible students.
2. **Federal Teach Grant** - TEACH Grant is a federally funded grant program available to students enrolled in specific programs who intend to teach in a public or private school that serves students from low-income families. Students can be considered for up to \$4000 per academic year, if eligible. To learn more, visit Student Aid on the Web.

### Loans:

1. **Federal Direct Unsubsidized Loan** - The Federal Direct Unsubsidized Loan is a non-need based, federally funded loan. To be considered for the loan, students should complete the FAFSA. Students receive a six-month grace period before entering repayment. The grace period begins six-months after the student ceases to be enrolled

at least half-time, discontinues their program of study or graduates. The yearly aggregate limit for the loan is \$20,500.

2. **Federal Direct Graduate PLUS Loan** - The Federal Direct Unsubsidized Loan is a non-need based, federally funded loan. To be considered for the loan, students should complete the FAFSA. The student receives a six-month grace period before entering repayment. The grace period begins six-months after the student ceases to be enrolled at least half-time, discontinues their program of study or graduates. Graduate PLUS Loans are awarded after the full yearly or lifetime (whichever limit is reached first) aggregate amount of the Direct Unsubsidized Loan is awarded (see above). Students must receive an approved credit result to borrow a Graduate PLUS Loan.

**Work-Study:**

1. **Federal Work-Study**- This is a federally funded, need-based work-study program that allows students to work on a part-time basis (on campus, off campus or at nonprofit agencies) to help meet their educational costs.

## **Satisfactory Academic Progress (SAP)**

To continue to be eligible for financial aid, students must meet Satisfactory Academic Progress. If a student is not meeting SAP standards, they may be ineligible for financial aid and scholarship. For more information, students should review the Satisfactory Academic Policy by visiting [www.ucdenver.edu/finaid/sap](http://www.ucdenver.edu/finaid/sap).

A student may appeal financial aid suspension by submitting a SAP Appeal. The SAP appeal should document the extenuating circumstances that led to the student's suspension. All appeals should include third party supporting documentation.

## **Withdrawals and Repayments**

Financial aid is disbursed based on the assumption a student will attend courses for the entire semester and earn passing grades. A student who withdraws or fails all courses and received financial aid must have a Return of Title IV (R2T4) calculation performed to determine the percentage of aid that was earned based on the amount of time the student attended their courses. Students are entitled to aid that was earned. The University will return any unearned aid to the appropriate Federal Title IV program, which may create a balance owed to the University.

CU Denver is required to verify a student began attendance in any course a student withdraws from or fails. If the Financial Aid & Scholarships Office receives notification that a student never began attendance, or is unable to document that a student began attendance in a course, the student's financial aid will be adjusted appropriately.

## **Scholarships**

The Financial Aid & Scholarships office awards over \$18 million dollars in scholarships annually. For a complete listing of the many scholarships offered at the Denver Campus, visit [www.ucdenver.edu/scholarships](http://www.ucdenver.edu/scholarships).

## Tuition and Fees

**Bursar:** Vacant (**Associate Bursar** - Eric Gray)

**Office:** Student Commons (AB1) 5123

**Telephone:** 303-315-1800

**E-mail:** [bursar@ucdenver.edu](mailto:bursar@ucdenver.edu)

**Website:** [www.ucdenver.edu/bursar/](http://www.ucdenver.edu/bursar/)

**Front Counter:** Student Commons (AB1) 5123

**Manager:** Debra Dorsey

**Telephone:** 303-315-1820

### **Bursar's Office Customer Service Phone Center**

303-315-1800 **Fax** 303-315-1805

- Application fees payments by credit card
- College Opportunity Fund
- Departmental deposit transactions
- Payment of tuition and fees
- Refunds and Direct Deposits
- Student account reconciliation
- Third-party billing and payments

All tuition and fee rates are established by the Board of Regents, the governing body of the University of Colorado, in accordance with legislation enacted annually by the Colorado General Assembly. The Regents set tuition rates and fees at a budget retreat each spring for the coming fall, spring, and summer terms, but reserve the right to change rates at any time. Rates for the current year are available online to assist prospective students in anticipating costs. Please refer to the web site at [www.ucdenver.edu/bursar](http://www.ucdenver.edu/bursar) in July for new rates.

## Drop Charge

Beginning the second Tuesday of the fall and spring terms until census date, a \$100 drop transaction charge will be assessed each time a student drops a course. Please refer to the academic calendar for summer dates. This includes student initiated drops done in order to change sections within a course. Section changes done for an administrative purpose through the deans' offices will be exempted from drop charges. If a student withdraws, dropping all classes, a drop charge will be assessed for each course.

## Payment of Tuition and Fees



All tuition and fees, except the application fee, are due on the day indicated on your billing statement. Students have an option to choose a payment plan available through QuikPAY, our payment processor. Specific information on the payment plan can be located [here](#).

Students who register for courses are liable for payment of tuition and fees if they withdraw from school after census date. Refund policies for students who withdraw from the university both before and after census date are included in the academic calendar. A student with financial obligations to the University will not be permitted to register for any subsequent term(s), to be issued transcripts or to be listed among those receiving a degree or special certificate. The only exception to this regulation involves federal student loans and other types of indebtedness that are due after graduation. Students may pay tuition and fees with personal checks, by credit card at the Bursar's Office, or through the UCDAccess portal. Any payment transaction that is returned by the bank will be assessed an additional returned payment charge.

The University of Colorado Denver is committed to providing students and their families a range of options for paying their educational expenses. The credit card payment method has become prohibitively expensive due to the fees charged by credit card companies to CU Denver for credit card transaction processing. This expense has been covered by University tuition revenues, and reduces the tuition dollars available for academic programs and services for all students. Therefore, a service fee of 2.75% of the payment amount will be assessed for all credit and debit card transactions.

Students who register in a non-degree status, and who later apply and are admitted to a degree status for that term, are responsible for the difference in tuition between the non-degree program and their applicable degree program and will be billed accordingly.

## Direct Deposit

Direct deposit is the standard method of issuing student account refunds to CU Denver students with credit balances. Students are strongly encouraged to sign up for direct deposit well in advance of any anticipated student account refunds, and may do so online via the UCDAccess portal - [How to Select Direct Deposit for Refunds](#).

Students who do not sign up for direct deposit will receive a paper refund check through the mail. Refunds will only be issued via direct deposit or through the mail. **Students are not allowed to pick up their refund check from the Bursar's Office.**

## Tuition Appeals

Students are responsible for abiding by the published deadlines. Tuition is not refundable when students drop or withdraw from courses after the published deadlines. If circumstances beyond the student's control have made the late drop or withdraw necessary, the student may file a tuition appeal.

Instructions and forms for submitting a tuition appeal are available on the Lynx Center website or in the Lynx Center.

## **Past Due Tuition and Fees**

Past due student accounts will be assessed a one-time per semester late fee and monthly service charge for every month the balance remains unpaid. After the semester of the past due debt, student accounts are referred to Student Debt Management. An overdue student account may be referred to a third party collection agency and reported to one or more credit bureau reporting services; the student explicitly authorizes University of Colorado Denver to release personal and financial information under those circumstances. To the extent permitted by applicable law, the student agrees to reimburse the University of Colorado Denver the fees of any collection agency, which may be based on a percentage at a maximum of 40% of the debt, and all costs and expenses, including reasonable attorney's fees, the University may incur in such collection efforts. In addition, while the student maintains a past due balance with the University of Colorado Denver, a hold will be placed on the student record preventing any future registration and the release of official transcripts.

Pursuant to C.R.S. § 23-5-115, in the event of a default on an amount owed to University of Colorado Denver, University of Colorado Denver may certify to the Colorado Department of Revenue information regarding persons with past due accounts. The Colorado Department of Revenue may then disburse funds to University of Colorado Denver in satisfaction of that debt from tax refund amounts owed to the individual, if any.

See the Tuition and Fees Payment Disclosure Statement.

For more information, please see the Bursar's Administrative Withdrawal Policy.

## **Residency Classification for Tuition Purposes**

Tuition classification is governed by Colorado statutes that apply to all state-funded institutions in Colorado. Institutions are bound by the provisions of this statute and are not free to make exceptions to the rules set forth.

Students are initially classified as in-state or out-of-state for tuition purposes at the time of application. The classification is based upon information furnished by the student and from other relevant sources. After the student's status is determined, it remains unchanged in the absence of satisfactory evidence to the contrary.

Once a student is classified as a nonresident for tuition purposes, the student must petition for a change in classification. Petitions must be submitted **NO LATER THAN THE MONDAY PRIOR TO THE FIRST OFFICIAL DAY OF CLASSES** of the term for which the student wishes to be classified as a resident. It is preferred that petitions be received 30 days prior to the beginning of the term. Late petitions will not be considered until the next semester. Specific information may be obtained from the Office of the Registrar.

The final decision regarding tuition status rests with the university. Questions regarding residence (tuition) status should be referred only to the tuition classification officer. Opinions of other persons are not official or binding upon the university. Additional information is available on our website.

## **Basic Requirements**

The statute provides that an in-state student is one who has been a legal domiciliary of Colorado for one year or more immediately preceding the beginning of the term for which the in-state classification is being sought. Persons over 23 years of age or who are emancipated establish their own legal domicile. Those who are under 23 years of age and are not emancipated assume the domicile of their parent or court-appointed legal guardian. A non-emancipated minor's parent/legal guardian must, therefore, have a legal domicile in Colorado for one year or more before the minor may be classified as an in-state student for tuition purposes.

## **Establishing Domicile**

Domicile is established when one has a permanent place of habitation in Colorado and the intention of making Colorado one's true, fixed and permanent home and place of habitation. The tuition statute places the burden of establishing a Colorado domicile on the person seeking to establish the domicile. The question of intent is one of documentable fact and needs to be shown by substantial connections with the state sufficient to evidence such intent. Legal domicile in Colorado for tuition purposes begins the day after connections with Colorado are made sufficient to evidence one's intent. The most common ties with the state are (1) change of driver's license to Colorado, (2) change of automobile registration to Colorado, (3) Colorado voter registration, (4) permanent employment in Colorado and most important, (5) payment of state income taxes as a resident by one whose income is sufficient to be taxed. Caution: payment or filing of back taxes in no way serves to establish legal domicile retroactive to the time filed. In order to qualify for in-state tuition for a given term, the 12-month waiting period (which begins when the legal domicile is established) must be over by the first day of classes for the term in question. If one's 12-month waiting period expires during the semester, in-state tuition cannot be granted until the next semester.

## **Resident Tuition for Military-Connected Students**

Military-connected students living in the state of Colorado may be able to receive in-state residency for tuition purposes at CU Denver and CU Anschutz as designated by Federal or State Law. Please review the information on the Veteran and Military Student Services website for more information.

### **Student Debt Management**

Student Commons Building Suite 5123

Customer Service Phone Center: 303-315-1800

- Past-due tuition collection
- Student loan processing

## **Student Commons Building**

### **Physical Location:**

1201 Larimer Street, Suite 5123

Denver, CO 80204

The Student Commons Building is located on Auraria Campus at the corner of Larimer and Speer.

### **Mailing address for Student payments:**

University of Colorado Denver | Anschutz Medical Campus

Bursar's Office

Mail Stop A098

13120 E. 19th Ave, Room 3120A

Aurora, CO 80045

# STUDENT SERVICES INFORMATION

## ***CAMPUS LIFE***

*The University of Colorado Denver, Denver Campus is physically located on the 151-acre Auraria Campus, which is shared with two other institutions-Metropolitan State University of Denver and Community College of Denver. Because we share facilities, our students have access to the level of resources found at much larger public universities. Since fall of 2006, the university has also been able to offer student housing adjacent to this traditionally commuter campus. Details about the campus and Campus Village are explained in this chapter.*

## **Auraria Campus**

Since opening in 1976, Auraria has become the largest campus in Colorado, enrolling nearly 50,000 students-20 percent of all the students in public higher education in the state. This is the most efficiently utilized campus in the state. Classrooms on the Auraria Campus are used an average of 50+ hours per week. Classes are held from 8 a.m. to 10 p.m. Monday through Thursday and from 8 a.m. to 6 p.m. on Friday, Saturday and Sunday. Some courses and programs are offered cooperatively by the Auraria educational institutions. Those pertaining to CU Denver students are outlined in this catalog.

The Auraria Campus offers numerous amenities to students, faculty and staff, from the largest bookstore in the Rocky Mountain region to a state-of-the-art fitness facility. Details of these amenities are outlined in this chapter.

In addition to its proximity to the thriving business and industry of downtown Denver, the Auraria Campus has a distinct historic flavor. The Tivoli Student Union is housed in a renovated brewery originally built in the 1860s. Historic Ninth Street Park, St. Cajetan's Church/Performing Arts Center, St. Elizabeth's Church, the Emmanuel-Sherith Chapel/Synagogue/Art Gallery and the Golda Meir House Museum are also located on campus.

### **Auraria Higher Education Center**

The Auraria Higher Education Center (AHEC) is the administrative body that coordinates the facilities, services and activities for the three educational institutions on campus. AHEC provides common services for the campus including: classroom scheduling, facilities services and construction, campus police, telecommunications infrastructure, student union, media services, book store, early learning center, parking and transportation, mail services and facilities master planning. Visit their website for additional information.

## **Campus Amenities**

### **Tivoli Station**

#### **(Formerly Auraria Campus Bookstore)**

**Location:** Tivoli Student Union, suites 105 and 205

**Phone number:** 303-556-4286

**Website:** [www.tivolystation.com](http://www.tivolystation.com)    **Facebook:** [facebook.com/TivoliStation](https://facebook.com/TivoliStation)

We've got you covered at Tivoli Station, your best resource for **technology, CU Denver spirit gear, and cost-saving options for textbooks**. We offer both convenience and value. Look to us for easy one-stop shopping and a variety of programs designed to benefit students.

#### **Tech Station**

As an **Apple Authorized Campus Store** and **Apple Authorized Service Provider**, we offer student discounts and in-store tech support. We also carry **Dell** computers, discounted HP technology, calculators, flash drives, headphones, and more.

#### **Book Station**

Thousands of textbook titles are available to rent (save up to 50%) or **buy new or used**. At the end of each semester, sell your used books for cash with the **Textbook Buyback Program**, a service we offer to help offset student expenses.

You can also visit [ahec.verbacompare.com](http://ahec.verbacompare.com) to compare textbook prices from the web, giving you options to find the best value available.

**Lynx Station**

Show your school spirit with **CU Denver clothing and gear**, such as shirts, hats, pants, lanyards, hoodies, mugs, and water bottles.

**Supply Station**

We offer a variety of course supplies, including general school supplies and art, culinary, and science lab materials.

**Reading Station**

In the general merchandise area, we provide study aids, reference materials, gift items, and discounted New York Times Bestsellers.

**Charging Station**

Charge your device for free using one of our phone ports or outlets.

**Snack Station**

Grab a snack while you are waiting for your device to charge, or take it on the go. We have pre-wrapped sandwiches, drinks, yogurt, chips, and candy.

**Campus Commitment**

We are committed to the campus. Revenue from the bookstore helps fund campus programs and keeps your student bond fee down. We are also one of the largest student employers on campus.

## Auraria Campus Event Services

**Location:** 900 Auraria Parkway, Suite 325 **Phone:** 303-556-2755

**Email:** [acesmaindesk@ahec.edu](mailto:acesmaindesk@ahec.edu) **Website:** [www.ahec.edu/eventservices](http://www.ahec.edu/eventservices)

Auraria Campus Event Services (ACES) manages all non-academic events that take place on the Auraria Campus. From a simple meeting to an impactful campus event like Spring Fling or Fall Fest, our team is committed to providing quality service and producing successful events.

A majority of the event spaces on campus are located in the Tivoli Student Union, but other event venues are also available in St. Cajetan's Event Center, the PE/Event Center, and several outdoor event spaces including the Tivoli Quad. Student groups can contact us for assistance with locating and booking a space and coordinating support services.

## Auraria Early Learning Center (Child Care Center)

**Location:** 950 9th Street Park **Phone Number:** 303-556-3188

The Auraria Early Learning Center (AELC) provides high quality early childhood care and educational programs to children 12 months and walking through 5 years old. The

programs at AELC are utilized by the children of college students, as well as children of faculty and staff on campus, and community members. There are 300 children in 12 classrooms and the center is open year round (except for holidays) from 7 AM to 6 PM, Monday through Friday. The Center also offers a fully accredited kindergarten program and a summer camp program. AELC has earned a 4 Star - or high quality - Qualistar rating, as ranked by Qualistar Early Learning.

## Auraria Event Center/Student Recreation Center

**Location:** PE Building/Event Center

**Phone:** 303-556-3210 (recreation), 303-352-4371 (fitness)

**Website:** <http://www.msudenver.edu/campusrec>

The Auraria Campus PE/Event Center is a 2,800-seat facility for team and individual sport activities, academic programs, events and conferences. Funds from the Student Recreation Fee support Campus Recreation at Auraria (CRA). At CRA, our purpose is to foster individual and community well-being through the power of engagement, leadership, partnership and recreation. CRA provides a wide range of affordable, high quality, and inclusive recreational and wellness opportunities designed to support personal, academic, community and institutional success of Auraria Campus students, faculty, staff, alumni and the community at-large. CRA consists of Fitness and Wellness, Outdoor Adventure and Leadership, Recreational Sports, Educations/Certification, Member Services, Employment Opportunities, Partnerships, and Community Outreach.

## Auraria Library

**Phone Number:** 303-556-2740

**Website:** <http://library.auraria.edu/services/askus>

The Auraria Library connects users with ideas through technology-enabled information discovery and delivery on an “anytime, anyplace” basis. The Library’s collections of learning materials, resources, and research services support the information, research, and curriculum needs of the Auraria Campus. Whether you are looking for a quiet place to read and reflect, a place to share a cup of coffee while working with classmates on a group project, a source of authoritative academic information, or a computer-enabled collaborative study room, the Library will meet your needs. Assistance from Library staff is available via one-on-one meetings, by phone, text, or chat on our website ([library.auraria.edu/services/researchhelp](http://library.auraria.edu/services/researchhelp)).

## Auraria Media Center and Classroom Support

**Location:** 1100 Lawrence Street (East side of the Auraria Library), 015

**Phone Number:** 303-556-2426      **Website:** <http://mediacenter.ahec.edu>

The Auraria Media Center and Classroom Support Services offers a full range of media services and classroom support:

- distance learning technologies including video conferencing, webinars, audio conferencing, video over IP and ISDN and videotaping of course delivery
- circulation of a wide range of audio, video and data (AVD) presentation equipment for one-time use
- long-term classroom equipment check-out
- production of content on digital tape, DVD, CD and videotape by an award-winning staff using state-of-the-art digital editing, graphics and animation systems
- quantity duplication of DVD, CD, audio and videotape media
- equipment maintenance and repair
- equipment/systems consultation and installation

The Auraria Media Center's 34-channel closed-circuit campus cable system can be used in the classroom to broadcast channels such as CNN, MSNBC, History, Discovery, A&E, PBS, CSPAN, NASA and local television networks. One channel is dedicated to and managed by each institution for distribution of programming of their choice.

Auraria Media Center staff are available to train faculty in the use of equipment in "smart" classrooms on campus and offer consulting services to faculty and other clients in such areas as media design and production, effective use of media types and effective use of distance learning technologies, effective use of those technologies and equipment selection to best meet instructional needs.

Auraria Media Center and Classroom Support Services will handle all of your classroom needs regarding furniture, projector screens, whiteboards, smart classroom equipment and ADA furniture placement.

## Emmanuel Gallery

**Location:** 10<sup>th</sup> and Lawrence Street Pedestrian Mall  
**Phone Number:** 303-315-7431

Tri-institutional campus on Auraria Campus for over 35 years. Historical landmark who received the Mayor's Art for Excellence in 2012 featuring national, international artists, designers and architects as well as featuring student and faculty shows for each school on campus. Stop in for a relaxing break

## Health Center at Auraria

**Location:** Plaza Building 150 **Phone Number:** 303-556-2525  
**24 Hour Mental Health Crisis Line:** 303-352-4455  
**Website:** [www.healthcenter1.com](http://www.healthcenter1.com)

### Medical Care

The Health Center at Auraria provides primary medical care, disease prevention, health education, wellness promotion, and various specialty services to all registered MSU Denver, CCD and CU Denver students.



The Health Center is open Monday through Thursday from 8 a.m. to 5 p.m., and Friday from 8 a.m. to 3 p.m.

## **Eligibility**

All current Students, faculty and staff on the Auraria Campus are eligible for medical services. Be prepared to show a Student I.D. card or a photo ID each time you check in. Payment Options

## **Payment**

Patients who participate or are enrolled in the MSU Denver or CU Denver Student Health Insurance will have their covered charges submitted directly to the insurance carriers. Patients are required to pay at the time of service for any plan exclusions and co-payments.

Health Center @ Auraria accepts most major health insurance plans because we understand the importance of health insurance for the individuals we serve. As insurance benefits shift and change, it is important to know your plan and what is covered before your appointment with your provider.

In an effort to assist our patients, Health Center @ Auraria has listed below the insurance plans we accept. We encourage you to access your individual policy, and identify what your specific plan will cover. Please note that, while many wellness and preventative services may now be covered 100% by your plan, specific benefits will vary according to your policy benefits.

It is imperative that patients review and understand their financial responsibility and portion of the services that are provided to them. Please contact your insurance carrier for specific details of your plan.

We currently accept most insurance plans with the following carriers:

**Aetna:** <https://www.aetna.com>

**Anthem Blue Cross/Blue Shield:** <https://www.anthem.com>

**Cigna:** <https://my.cigna.com>

**Cofinity:** (refer to the link on the back of your insurance card)

**Humana:** <https://www.humana.com>

**Multi-plan:** (refer to the link on the back of your insurance card)

**Rocky Mountain Health Plan:** <http://www.rmhp.org>

**TriCare:** <https://tricare.mil/>

**United HealthCare:** <https://www.myuhc.com>

## **Staff**

The Health Center is staffed by Physicians, Physician Assistants, Nurse Practitioners, Radiologic Technologists, Medical Assistants, and Allied Health Professionals. Psychiatrists and Gynecologists provide specialty medical care.

## **Appointments**

To be respectful of your time it is suggested that you schedule an appointment in advance by calling (303) 556-2525. Walk-in Care is also available on a “first come / first served” basis. Patients are encouraged to arrive early to increase the likelihood of Walk-in availability. Patients are scheduled for a same day or a future appointment according to the severity of their medical need.

## **Services**

The Health Center at Auraria can treat the majority of your health concerns on-site, including illnesses, injuries and physicals. See the list below for other on-site services.

- Illness Treatment
- First Aid
- Urgent Care
- Physical Examinations
- Lab Testing
- X-ray
- Medications
- Skin and Mole Evaluations
- Immunizations
- Blood Pressure Check
- Annual Gynecologic Exams
- Safer Sex Instruction
- Sexually Transmitted Disease Screening and Treatment
- Pregnancy Tests
- Birth Control Information and Supplies
- Colposcopy/Cryotherapy
- Referral to On-Site Physician Specialists
- Psychiatrist Consultations (referral needed)
- Cholesterol Screening/Fitness Analysis
- Minor Surgery/Suturing/Biopsies

## **Free clinical Services**

The Health Center at Auraria offers a variety of services at no charge regardless of insurance coverage. These exclusive free services are available to all MSU Denver, CU Denver, CCD and AHEC students, faculty and staff.

**Free services include:**

- Flu Vaccination
- HIV Testing, including Rapid HIV Testing
- Nutritional Counseling
- Prescriptive Exercise Rehabilitation
- Tobacco Cessation - includes free medication if indicated

## King Academic and Performing Arts Center

**Location:** 855 Lawrence Way **Phone Number:** 303-556-2179

**Website:** [www.ahec.edu/kingcenter](http://www.ahec.edu/kingcenter)

The King Center houses six performing spaces: three permanently assigned production studios, a 197-seat recital hall; 520-seat concert hall; and the 270 seat Eugenia Rawls Courtyard Theatre. There are dressing rooms, green room, recording studio, lighting lab, music electronics lab, classroom space, box office, scene shop, paint shop and costume shop. All spaces are fully equipped with state-of-the-art equipment and a variety of spaces for exhibiting fine art. The entire facility has more than 180,000 square feet dedicated to the education of the student and development of the student who wishes to study performance/arts. The center can support many forms of entertainment, anywhere from legit theatre to large choral ensembles and other forms of performances.

You can usually find staff in the offices between 9:00am - 4:30p. But we have employees on site at any given time and day of the week depending on the three institutions performance schedules.

## Tivoli Student Union

**Location:** 900 Auraria Parkway #325

**Phone Number:** 303-556-6330

**Website:** [www.ahec.edu/tivoli](http://www.ahec.edu/tivoli)

The Tivoli Student Union, managed by the Auraria Higher Education Center's Student Facilities Services department, provides a wide variety of amenities for the campus community. As the hub of the campus, the Tivoli Student Union houses the campus bookstore, called Tivoli Station, full-service restaurants and a food court, conference and meeting spaces, and facilities for recreational, social, and organized co-curricular student activities. The following services are located in the Tivoli Student Union:

- Tivoli Station (bookstore)
- Commuter Resource Center (ID Center)

- Sigi's Pool Hall
- Ricoh Copy Center
- Credit Union of Denver
- Public Service Credit Union
- i-lov-iT Market
- Free mobile charging stations (at Tivoli Station)
- Study lounges
- Restaurants, a coffee shop, and a food court

### **Club Hub**

**Location:** 900 Auraria Parkway, Suite 346    **Phone Number:** 303-556-8094

**Website:** [www.ahec.edu/club-hub](http://www.ahec.edu/club-hub)

The Club Hub provides free workspace for over 60 student clubs, as well as group meeting spaces and lounge areas. We support clubs in pursuing their goals and objectives, and also provide the opportunity to interact with other organizations on campus. Clubs must receive official recognition from their institution for Club Hub privileges. Our services include computer workstations with Internet access and printers, fax machines, mailboxes, and office supplies.

### **ID CENTER (COMMUTER RESOURCE CENTER)**

**Location:** 900 Auraria Parkway, Suite 269    **Phone Number:** 303-556-8385

**Website:** [www.ahec.edu/id-center](http://www.ahec.edu/id-center)

The Commuter Resource Center (ID Center) provides information about programs and services available to the campus community related to commuting to campus, student IDs, the RTD CollegePass, off-campus housing, getting around campus, and much more. Visit the ID Center to get your University of Colorado Denver student ID card and your RTD CollegePass smart card for unlimited rides on the RTD bus and light rail system.

### **SIGI'S POOL HALL**

**Location:** 900 Auraria Parkway, Suite 145    **Phone Number:** 303-556-3645

**Website:** [www.ahec.edu/sigis](http://www.ahec.edu/sigis)

Sigi's Pool Hall is a rec room for students to relax and meet with friends between classes. In addition to a lounge area with big screen TVs, lunch tables, and use of a microwave, we have pool, ping-pong, poker, and a variety of Xbox or Wii video games. Join us for monthly tournaments for the chance to win prizes! Sigi's is also home to the MSU Denver Food Bank.

## **Campus Safety**

**Auraria Police Department**

**Location:** 1201 5th Street, Denver, CO 80217

**Police Dispatch Number:** 303-556-3271

*Located in the Administration Building on the Auraria Campus*

### **Campus Police Mission**

The Auraria Campus Police Department is committed to enhancing the quality of life on the Auraria Campus by protecting life and property, and providing a wide range of services to prevent crime and resolve problems.

**Services** (*The Auraria Campus Police Department provides campus services 24 hours a day, 7 days a week.*)

- Crime prevention programs
- Informational services
- Police support to campus staff
- Night escorts to your vehicle
- Security patrols, bicycle patrols, foot patrols
- Vehicle unlocks
- Emergency response (Emergency Phone  
Map: <http://www.ahec.edu/campusmaps/index.htm>)
- Timely Notification Bulletin for the Auraria Campus
- Immediate notice of crimes affecting the Auraria Campus.

The Auraria Handivan Service is offered Monday through Thursday 7:00 am-10:00 pm and on Friday's from 7:00 am-6:00 pm. Also, take advantage of Auraria's Nightrider escort service. It will take you to any building or parking lot on campus Monday through Thursday, Sundown to 10:00pm. The wait time is usually no longer than 10 minutes. To arrange for the Nightrider, contact the Auraria Parking Office at (303) 556-2001. If the Nightrider is not running, contact the Auraria Campus Police Department at (303) 556-5000 to arrange for an escort to your car.

The Emergency Notification System (ENS) tool provided by the University of Colorado Denver (CU Denver) for students, faculty and staff provides timely life-safety alerts. You are able to receive these alerts via text, voice and email messaging. Your CU Denver email address has already been added to this system. If you would receive emergency alerts on your cell phone, make sure that you enter your cell phone number into the PROFILE section of your student or employee portal at <https://my.cu.edu/>. **Identify the phone type as a "Cellular" device and check it as the "Preferred" number.** If you have questions, please contact the CU Denver Emergency Manager, Essi Ellis, at [Essi.Ellis@ucdenver.edu](mailto:Essi.Ellis@ucdenver.edu) or by phone at 303-724-1031.

## **The Office of Commuter Services**

**Location:** Tivoli Student Union, 227

**Phone:** 303-556-2444 **Email:** [CommuterServices@ucdenver.edu](mailto:CommuterServices@ucdenver.edu)

**Off-Campus Housing Database Website:** [offcampushousing.ucdenver.edu](http://offcampushousing.ucdenver.edu)

The Office of Commuter Services supports students with commuting resources and an off-campus housing database that can be accessed through the link listed above. Any on-campus housing questions should be directed to Campus Village at 303-573-5272 or [Housing@ucdenver.edu](mailto:Housing@ucdenver.edu).

## **Student Right To Know and Disclosure Information**

### **Crime Statistics**

In compliance with the federal Student Right-to-Know and Campus Security Act, the Auraria Campus publishes crime statistics on campus in the Auraria Campus Clery Report. In an emergency, please contact Auraria Campus Police at 303-556-5000 or dial 911 from a campus phone.

### **Persistence and Completion Data**

Section 103 of Title 1 of Public Law 101-542 as amended by Public Law 102-26 (the Federal "Student Right-to-Know" Act) requires that institutions produce and make available to current and prospective students the completion rate of first-time, full-time, degree-seeking undergraduate students entering the institution. Six years after entering, 40 percent of the fall 2008 cohort graduated.

CU Denver's one-year fall-to-fall retention rate is 75 percent for the fall 2012 cohort. That is, of the first-time, full-time, degree-seeking undergraduate students who entered the university in fall 2012, 75 percent were enrolled at the Denver Campus in fall 2013 at the end of the term.

Voluntary System of Accountability (VSA) data indicate that the 2008 Denver Campus first-time, full-time, degree-seeking freshman cohort has an overall 4-year success rate of more than 80%, with 21% retained at another institution, 40% retained at CU Denver, nearly 15% graduated from CU Denver, and another 5.6% received degrees elsewhere.

### **Riot Law (Student Riot Bill)**

Student enrollment-prohibition-public peace and order convictions: 1) No person who is convicted of a riot offense shall be enrolled in a state-supported institution of higher education for a period of 12 months following the date of conviction; 2) a student who is enrolled in a state-supported institution of higher education and who is convicted of a riot offense shall be immediately suspended from the institution upon the institution's notification of such conviction for a period of 12 months following the date of conviction, except that if a student has been suspended prior to the date of conviction by the state-supported institution of higher education for the same riot activity, the twelve month suspension shall run from the start of the suspension imposed by the institution; 3) nothing in this section shall be construed to prohibit a state-supported institution of higher education from implementing its own policies and procedures or disciplinary actions in addition to the suspension under (2) of this section, regarding students involved in riot.

### **Sex Offender Information (Campus Sex Crimes Prevention Act)**

Sex offenders are required to list the locations of all institutions of post-secondary education where they volunteer or are enrolled or employed. The Colorado Bureau of Investigation maintains a database identifying all such persons and makes it available to all law enforcement agencies in which jurisdiction the institution of postsecondary education is

located. The campus community can obtain this information by contacting the Auraria Police Department at 303-556-5000.

**Voter Registration (National Voter Registration Act)**

In compliance with the National Voter Registration Act, the state of Colorado voter registration application form and information is available online at [www.sos.state.co.us/pubs/elections/](http://www.sos.state.co.us/pubs/elections/) or [www.fec.gov/votregis/vr.shtml](http://www.fec.gov/votregis/vr.shtml).

## ***STUDENT SERVICES***

### **Campus Assessment, Response and Evaluation (CARE) Team**

**Location:** Tivoli Student Union, Suite 227

**Phone Number:** 303-315-7306

**Website:** <http://www.ucdenver.edu/life/services/CARE/Pages/default.aspx>

**Email:** [shareaconcern@ucdenver.edu](mailto:shareaconcern@ucdenver.edu)

Submit a concern

at: [https://cm.maxient.com/reportingform.php?UnivofColoradoDenver&layout\\_id=1](https://cm.maxient.com/reportingform.php?UnivofColoradoDenver&layout_id=1)

The Campus Assessment, Response & Evaluation (CARE) Team is committed to improving campus safety and student success at both the CU Denver and CU Anschutz Medical Campus by proactively and collaboratively managing situations and individuals that pose, or may reasonably pose, a threat to the safety and well-being of the campus community. The team coordinates with students, faculty, and staff as well as concerned others, using objective and thoughtful approaches to identifying, assessing, and intervening with individuals of concern.

### **The Career Center**

**Location:** Tivoli Student Union, LynxConnect, Suite 339

**Phone Number:** 303-315-4000

**Website:** <https://www1.ucdenver.edu/services/career-center>

**Email:** [CareerCenter@cdenver.edu](mailto:CareerCenter@cdenver.edu)

The Career Center offers a full array of services that prepare students for their transition from college to career. Students are encouraged to participate in career-related events and services as early as their freshman year. This includes obtaining help in choosing a major, deciding on career options, and mapping out experiences necessary to be successful upon graduation. The Career Center also supports students in refining job search skills like resume & cover letter writing, interview preparation, and targeting employers through our internship and job board called Handshake.

The Career Center's mission is to provide personal and meaningful interactions with students, alumni and employers in order to prepare them for the world of work.

## Club Sports

**Location:** Lola & Rob Salazar Student Wellness Center

**Phone Number:** 303-315-9355

**Web:** <http://www.ucdenver.edu/clubsports>

**Email:** [lynxwellness@ucdenver.edu](mailto:lynxwellness@ucdenver.edu)

Club Sports is a program designed to provide students with the opportunity to engage in team sports in a friendly and competitive environment. The purpose of the program is to unite individuals with a shared interest in sports, develop lasting friendships, and build community among students across campus, all while increasing their overall well-being through physical activity. Any student who is enrolled in at least 1 credit hour and is paying the Club Sports fee may participate in Club Sports. Students can pick from a variety of sports to participate in and have the chance to serve in a leadership position during their time. All Club Sports serve under the Wellness and Recreation Services department and indoor practice spaces are housed in the Lola and Rob Salazar Student Wellness Center. Club Sports policies and guidelines can be found in the Club Sports Manual.

## Community Engagement

**Location:** Tivoli Student Union Suite 303

**Phone Number:** 303-315-7288

**Website:** <http://www.ucdenver.edu/life/services/studentlife/Pages/StudentLife.aspx>

**Email:** [Volunteer@ucdenver.edu](mailto:Volunteer@ucdenver.edu)

In college, getting involved with your community can lead to future job opportunities, discovering your passion, and making friendships that last a lifetime! Through the Office of Student Life, we offer a variety programs to help students get connected to the community. The Alternative Break program allows students to travel to various cities (and countries) to volunteer over spring, winter and summer breaks. Lynx to College Now! employs CU Denver students to work as mentors at Oakland Elementary School. Stop and Serve tables let students make a difference without even leaving campus, and Day of Service events are a great way to make friends while serving local nonprofits. Follow Community Engagement on OrgSync to hear about upcoming events, and be sure to stop by the Office of Student Life (Tivoli 303) to learn more about volunteerism and service.

## Office of Student Conduct and Community Standards

**Location:** Tivoli Student Union 309

**Phone Number:** 303-315-7311



**Website:** <http://www.ucdenver.edu/life/services/standards/Pages/default.aspx> **Email:** Please refer to website for more information

We serve the university community by meeting the developmental and educational needs of students related to community expectations, civility and respect for self and others. We support community members with conflict management and resolution, and respond to inappropriate and threatening behaviors. We provide student-centered educational services, which promote personal development and individual responsibility. We strive to create a dynamic, open and just environment where civility, cultural competence and learning are expected and celebrated.

## CU Denver Live!

**Location:** Various Locations: refer to website for more information **Phone Number:** 303-315-5483

**Website:** <https://cudenverlive.com/> **Email:** [live@ucdenver.edu](mailto:live@ucdenver.edu)

*CU Denver Live!* is a student run arts programming committee that works as a sub-committee under The Events & Partnerships. *CU Denver Live!* strives to program arts events that spark the interests of numerous types of students while maintaining a multicultural and educational mindset. Additionally the team hopes to create a fun and inclusive atmosphere that promotes school pride and a sense of community at CU Denver.

## Disability Resources and Services Office

**Location:** Student Commons Building, Room 2116 **Phone Number:** 303-315-3510

**Website:** <http://www.ucdenver.edu/disabilityresources> **Email:** [disabilityresources@ucdenver.edu](mailto:disabilityresources@ucdenver.edu)

The Office of Disability Resources and Services (DRS) is committed to providing equal opportunities and fostering the personal growth and development of students with disabilities. The DRS staff strives to meet the needs of a large and diverse community of students with disabilities. We are available to provide assistance and to arrange for reasonable accommodations that will address specific educational needs. Accommodations may include, but are not limited to, the following:

- Priority registration for classes
- Assistance in identifying volunteer note takers
- Alternative testing for assessment tests and classroom examinations
- Oral/sign language interpreters
- Real-time captioning
- Textbooks in alternate formats (audio taped, Braille, enlarged, scanned)

## Center for Identity & Inclusion

**Location:** Student Commons Building, Room 2007

**Phone Number:** 303-315-1880

**Website:** <http://www.ucdenver.edu/about/departments/odi/CII/Pages/default.aspx>

**Email Address:** [cii@ucdenver.edu](mailto:cii@ucdenver.edu)

**Office Hours:** 8:00 am - 5:00 pm

The Center for Identity & Inclusion (CII) provides services: a) to support underrepresented students and b) to promote a diverse and inclusive campus for all students, faculty, and staff.

### **American Indian Student Services**

Location: Student Commons Building, Room 2007C

Phone Number: 303-315-1882    [grace.tyon@ucdenver.edu](mailto:grace.tyon@ucdenver.edu)

### **Asian American Student Services**

Location: Student Commons Building, Room 2007E

Phone Number: 303-315-1879    [soyon.bueno@ucdenver.edu](mailto:soyon.bueno@ucdenver.edu)

### **Black Student services**

Location: Student Commons Building, Room 2007F

Phone Number: 303-315-1881    [omar.montgomery@ucdenver.edu](mailto:omar.montgomery@ucdenver.edu)

### **Latinx Student Services**

Location: Student Commons Building, Room 2007H

Phone Number: 303-315-1878    [abenicio.rael@ucdenver.edu](mailto:abenicio.rael@ucdenver.edu)

## ESL Academy

**Location:** 1100 Lawrence St #014

**Phone:** 303-315-2383

**Website:** <http://esl.ucdenver.edu>

**Email:** [esl@ucdenver.edu](mailto:esl@ucdenver.edu)

The University of Colorado Denver's English as a Second Language (ESL) Academy offers a rich diversity of academic, social, and cultural learning opportunities. The Academy offers high-quality, year-round ESL instruction specifically designed for university preparation. The curriculum helps students improve their language skills through a rigorous program of study, campus involvement, and cultural and educational activities.

Our program offers the following distinctive advantages when compared against other programs:

The curriculum is designed especially for university-bound students. In addition to mastering academic English, students will learn how to succeed academically at the University of Colorado Denver.

Students in the ESL Academy will be considered University of Colorado Denver students. They will be on the university campus from day one of our program and will be eligible to live in university housing, though there will be limited availability for students who join our program mid-term.

Students will have access to all of the activities and resources that the university has to offer, not to mention the spectacular outdoors and urban life in Denver and Colorado.

Students may be allowed to take one or two regular academic courses that count towards fulfillment of CU Denver degree requirements once they achieve a measure of English proficiency.

When a student completes the ESL Academy successfully, s/he will automatically fulfill the University of Colorado Denver's English language proficiency requirement and will be eligible for full admission.

Students will be issued a Form I-20 from the University of Colorado Denver for a seamless immigration experience and will not have to transfer their immigration status to begin their degree program upon complete completion of the ESL Academy.

Students will benefit from a seamless transition to university degree programs after they successfully complete the ESL Academy, thus maximizing the prospects of their success.

For full details, visit the ESL Academy online at [esl.ucdenver.edu](http://esl.ucdenver.edu). Here, students can get information about:

- The online application
- Program information
- Tuition and Fees
- International Student Services

If you have additional questions you may send an email to [esl@ucdenver.edu](mailto:esl@ucdenver.edu) or call 303-315-2383. Located at 1100 Lawrence Street #014 Denver, CO 80204

## Experiential Learning Center

**Location:** Tivoli Student Union, LynxConnect #439

**Phone Number:** 303-315-7258

**Website:** <http://www.ucdenver.edu/life/services/ExperientialLearning/Pages/default.aspx>

**Email:** [Experiential.LearningCenter@ucdenver.edu](mailto:Experiential.LearningCenter@ucdenver.edu)

Experiential learning includes a variety of activities with one common goal-to immerse you in hands-on learning outside the classroom where your experience is at the heart of the learning process. The Experiential Learning Center (ELC) serves students, faculty, and employers as a resource for experiential learning opportunities. We offer information, resources and support in the development and coordination of

academic and non-academic internship experiences, professional skill development opportunities, and undergraduate research experiences.

## **LGBTQ Student Resource Center at Auraria**

**Location:** Tivoli Student Union 213

**Phone Number:** 303-615-0515

**Website:** <http://www.ucdenver.edu/life/services/glbts/services/Pages/default.aspx> **Email:** [info@glbtss.org](mailto:info@glbtss.org)

The LGBTQ Student Resource Center is a tri-institutional office on the Auraria Campus serving the students, faculty and staff of Metropolitan State University of Denver, Community College of Denver and University of Colorado at Denver. We are available to all Auraria students as a resource for exploring issues of sexual orientation and gender identity.

The LGBTQ Student Resource Center is located in the Tivoli Student Union, Room 213, and is staffed by a director and assistant director, with the support of student employees and volunteers. Input and involvement from the entire campus community are welcomed. Our center offers a variety of support, education, and advocacy services for the entire campus community including:

- Support for those who may have questions about their own sexual orientation, gender identity, gender expression, or that of a friend or family member
- Advocacy for students experiencing discrimination or harassment based on a real or perceived LGBTQ identity
- Speakers for events, workshops, and classes on various aspects of sexual orientation/gender identification
- Programs and workshops about working more effectively with the gay, lesbian, bisexual, and transgender communities and combating misinformation, misconceptions, and homophobia
- Resource library with over 1700 books and videos (documentary and cinema) available for research and leisure as well as a multitude of free literature regarding other organizations and services throughout Denver and Colorado that provide outreach, services, and advocacy.

## **The Office of Global Education/Study Abroad**

**Location:** Tivoli Student Union, LynxConnect Suite 439

**Phone Number:** 303-315-2001

**Website:** [www.ucdenver.edu/studyabroad](http://www.ucdenver.edu/studyabroad)

**Email:** [study.abroad@ucdenver.edu](mailto:study.abroad@ucdenver.edu)

The Office of Global Education / Study Abroad provides academically and professionally relevant international experiences to a diverse student population at the University of Colorado Denver | Anschutz Medical Campus. These experiences equip students with cross-cultural skills necessary to succeed in an interconnected global society. The

Office of Global Education is committed to providing students with a wide range of engaging and affordable study, internship, research, and clinical opportunities.

International program offerings vary to meet the needs and interests of all students. These programs are open to undergraduate, graduate, and international students; it is not necessary to be a particular major to participate. Program lengths range from two weeks to an academic year or more. The vast majority of programs do not require language proficiency beyond the English language.

The Office of Global Education strives to keep study abroad programs affordable. In most cases, students are able to utilize financial aid and are eligible for an array of internal and external scholarships. For the most current information on programs, policies, and funding, please visit the Office of Global Education website at [ucdenver.edu/studyabroad](http://ucdenver.edu/studyabroad) or visit LynxConnect in the Tivoli.

## International Affairs

**Location:** Lawrence Street Center, Suite 932      **Phone Number:** 303-315-2230

**Website:** [www.ucdenver.edu/international](http://www.ucdenver.edu/international)      **Email:** Please refer to website for more information

The Office of International Affairs (OIA) serves the university by providing administrative support, strategic advice, technical services, collaborative educational programs with the university's 13 schools and colleges, and related services that contribute to the strategic international goals of the university. OIA provides visa and orientation services to international students and scholars; offers expertise in the development and maintenance of undergraduate, graduate and professional global education; assists with brokering and designing bilateral international educational programs; and offers comprehensive international recruitment and admissions services. OIA addresses international policy issues, has oversight of international risk management protocols, serves as a resource for best practices in the internationalization of higher education, maintains central data bases pertaining to international activities of the university, advises on the development of international affiliations and agreements, assists departments/programs and schools/colleges with the development of comprehensive international strategic planning, and seeks to promote and support initiatives that advance international research, education, and global cooperation in order to enhance the reputation of the University of Colorado Denver | Anschutz Medical Campus.

OIA also serves as a resource for faculty seeking international research opportunities, provides a comprehensive list of international scholarship/fellowship information, and serves as the institutional liaison for the CIES Fulbright Scholars Program.

The divisions of OIA include:

- ESL (English as a Second Language) Academy ([www.ESL.ucdenver.edu](http://www.ESL.ucdenver.edu))

- International Operations  
(<http://www.ucdenver.edu/academics/InternationalPrograms/oia/operations>)  
([www.international.ucdenver.edu](http://www.international.ucdenver.edu))
- Global Education: Study Abroad ([www.ucdenver.edu/studyabroad](http://www.ucdenver.edu/studyabroad))
- International Admissions ([www.internationaladmissions.ucdenver.edu](http://www.internationaladmissions.ucdenver.edu))
- International Student and Scholar Services  
([www.international.ucdenver.edu/ISSS](http://www.international.ucdenver.edu/ISSS))

## International Colleges and Partnerships

### International College

**Beijing-** <http://www.ucdenver.edu/academics/internationalprograms/oia/icb/Pages/default.aspx>

International College Beijing (ICB) is a joint education program between the University of Colorado Denver (CU Denver) and China Agricultural University (CAU), located in Beijing, People's Republic of China. The partnership, formed in 1994, was one of the first of its kind approved by the Chinese Ministry of Education.

At ICB students can choose to earn a CU Denver Bachelor of Arts degree in either economics or communication on site in Beijing. Students can also choose to study in Denver to complete their undergraduate programs after a year or two of study at ICB. As courses are taught in English by CU Denver faculty, U.S. students can learn or perfect their Chinese while pursuing rigorous courses alongside ICB Chinese students, fostering a truly global classroom experience.

ICB is located on the east campus of China Agricultural University in the Haidian district north of downtown Beijing. The campus is a 30-minute ride from downtown Beijing, Beijing International Airport and major cultural centers such as Tiananmen Square, the Forbidden City and the Summer Palace.

Joanne Wambeke, International Student Cohort and International Operations Manager, [joanne.wambeke@ucdenver.edu](mailto:joanne.wambeke@ucdenver.edu), 303-315-2121.

## International Student and Scholar Services

**Location:** Lawrence Street Center, Suite 932

**Phone Number:** 303-315-2230

**Website:** [international.ucdenver.edu/ISSS](http://international.ucdenver.edu/ISSS)

**Email:** [iss@ucdenver.edu](mailto:iss@ucdenver.edu)

The International Student & Scholar Services (ISSS) unit in the Office of International Affairs serves approximately 1,400 international students and 500 international scholars from all over the world each year. ISSS is responsible for ensuring university-wide compliance with a wide range of federal regulations relating to the enrollment and/or employment of international students and scholars. ISSS creates immigration documents, coordinates Check-In and Fundamentals sessions for new international

students, helps students maintain their immigration status once they are here, offers a variety of programs and activities, and advises students on everything from adjusting to a new culture to applying for work authorization. ISSS also works closely other members of the University of Colorado Denver community to ensure the success of our international students. For additional information about ISSS staff members and the services we provide, please visit our website at [international.ucdenver.edu/ISSS](http://international.ucdenver.edu/ISSS)

## Office of Case Management

**Location:** Tivoli Student Union 309

**Phone:** 303-315-7306

**Website:** <http://www.ucdenver.edu/life/services/care/case/Pages/default.auxt.aspx> **Email:** [esm@ucdenver.edu](mailto:esm@ucdenver.edu)

The Office of Case Management is here to support CU Denver | Anschutz students who may be experiencing difficult times related to mental health, safety concerns, interpersonal conflict, adjusting to college, family emergencies, feelings of isolation and anything else which may impact a student's ability to be successful at CU Denver | Anschutz. Our goal is to make sure that every student receives the support they need to thrive within the CU Denver | Anschutz community. Case Managers collaborate and consult with students, parents, faculty, staff, and other campus resources to best address the diverse needs of each student. Our office helps students navigate university systems, offices, and can assist with professor notifications, medical withdrawals, retroactive withdrawal processes, etc.

## Office of Information Technology

**Location:** Lawrence Street Center, 1350

**Phone:** 303-724-4357 (4-HELP)

**Website:** <https://www1.ucdenver.edu/offices/office-of-information-technology>

**Email:** [UCD-ITS-HelpDesk@ucdenver.edu](mailto:UCD-ITS-HelpDesk@ucdenver.edu)

The Office of Information Technology (OIT) works in partnership with academic and business units to provide technical support to meet the needs of faculty & staff at the Denver/Anschutz Medical Campus. OIT serves as the primary source of enterprise-wide technology and telecommunications services in support of all faculty and staff.

Services range from providing help desk and desktop services to enterprise-wide services in web development, networking, email, security, systems development, and telephony to protecting the integrity of the University's data and administrative systems. Users are encouraged to contact the Help Desk for assistance with any of these services.

OIT also provides student computing services to currently enrolled students within the computer labs located in the North Classroom 1206, The Student Commons Building 2nd floor, and the Tivoli 241. The computer labs have Macintosh and Windows-based

computers with Internet access available for student use on a first-come first-served basis. For more information, call the OIT Help Desk at 303-724-4357 (4-HELP) or UCD-ITS-HelpDesk@ucdenver.edu

## Ombuds Office

**Location:** Lawrence Street Center Building, Room 1003    **Phone:** 303-315-0046

**Website:** [www.ucdenver.edu/ombuds](http://www.ucdenver.edu/ombuds)

**Contact:** Teresa Ralicki;

**Email:** [Terese.ralicki@ucdenver.edu](mailto:Terese.ralicki@ucdenver.edu)

The Ombuds Office is a free service that assists students in resolving UCD conflicts, complaints, and disputes. The cornerstones of our office are: confidentiality, impartiality, informality, and independence. Students typically use our office when facing issues that seem unfair to them or when they just don't know what to do next.

A sampling of concerns are:

- The actions of faculty, staff, or other students
- Denials of petitions
- Harassment of any kind
- Administrative decisions
- Grading disputes
- Clarification of policies or procedures

We can assist you in identifying and evaluating your options for dealing with issues so you can have the best chance of reaching a satisfactory outcome. Our Ombuds can also mediate disputes involving student clubs and organizations and provide conflict management training. We will happily accommodate your schedule for a meeting time that works best for you.

## Student and Community Counseling Center

**Location:** Tivoli Student Union 454

**Phone Number:** 303-615-9911

**Website:** [www.ucdenver.edu/counselingcenter](http://www.ucdenver.edu/counselingcenter) **Email:** Please refer to website for more information

The Student and Community Counseling Center provides counseling sessions, groups and life skills workshops at no charge to students attending the Downtown Campus. Our services emphasize client strengths, recognizing diversity and promoting wellness to optimize academic success. We serve individuals, couples, families, and groups for mental health concerns including, but not limited to:

Anxiety, Crisis Intervention, Depression, Life skills, Relationships, Social justice issues, Stress management, Substance abuse, Biofeedback, and Trauma Therapy.



If appropriate, we refer students to additional on-campus and/or community resources through our WRAP (Wellness Resources Action Plan) program. By request, staff provide consultation, lectures and workshops to student, faculty, and staff groups on mental health topics, diversity, center services, and organizational and student development.

## Student Government Association

**Location:** Tivoli Student Union 301

**Phone Number:** 303-315-7286

**Website:** <http://www.ucdenver.edu/sga>

**Email:** [sga@ucdenver.edu](mailto:sga@ucdenver.edu)

The Student Government Association serves as a voice for students. Similar to the structure of the U.S. Government, SGA has executive, legislative and judicial branches. Executives, Senators, College Council Members, and SACAB representatives are elected each year in the spring semester. SGA assists students with information concerning student clubs and organizations, campus events, issues concerning student status and other information of general interest to students. SGA also provides student assistance with grievances and the opportunity to become more closely involved with the university community through active participation in student government itself or through service on university, tri-institutional and Auraria committees.

## Student Health Insurance Office

**Location:** Plaza Building, Suite 150

**Phone Number:** 303-615-9999

**Website:** <https://www.msudenver.edu/healthcenter/> **Email:** Please refer to website for more information

Hours: Monday- Thursday: 8:00am- 5:00pm, Friday 8:00am- 3:00pm

The Student Health Insurance Office strongly encourages all students to have adequate health insurance coverage. The university health plan is designed to coordinate services with the Health Center at Auraria to provide quality health care at the lowest possible cost. **For domestic students, the university health plan is voluntary.** International students with F-1 and J-1 student visas are required to carry the health insurance plan provided by the university. For more information for international students, please visit: <https://www.msudenver.edu/healthcenter/cudenverstudentinsurance/>

## The Office of Student Life

**Location:** Tivoli Student Union 303

**Phone Number:** 303-315-7288

**Website:** [www.ucdenver.edu/studentlife](http://www.ucdenver.edu/studentlife)

**Email:** [studentlife@ucdenver.edu](mailto:studentlife@ucdenver.edu)

The Office of Student Life integrates the academic, residential, and co-curricular spheres of student's lives, linking the out-of-class experience to the academic mission of the University while enhancing the overall educational experience of students through the development of, exposure to and participation in social, cultural, intellectual, recreational, leadership and governance programs. Student Life and Campus Community is the advising, coordinating, resource and general information center for student organizations, the academic honor societies student government and the student newspaper. We collaborate with students, faculty, administrators, and other partners both inside and outside of the CU Denver community to create safe environments for students. In addition, we create opportunities for students to learn through active participation and reflection where they can develop as responsible leaders and engage with their peers and cultivate appreciation for diversity and the betterment of our global society. Student Life and Campus Community is comprised of Student Organizations and Student Leadership Programs, Volunteer and Community Engagement, and Parent and Family Program.

## **Student Newspaper: CU Denver Sentry**

**Location:** Tivoli Student Union, 345

**Phone Number:** 303-556-2535

**Website:** [www.cu-sentry.com](http://www.cu-sentry.com)

**Email:** Please refer to website for more information

The purpose of the *CU Denver Sentry* is to provide students with information about campus issues and events. The newspaper strives to include good investigative reporting, feature articles and items of general interest to its campus readership. In addition, the newspaper is a tool to encourage and develop writers, journalists, artists and other student members of its general management and production staff.

## **Student Organizations and Student Leadership Programs**

**Location:** Tivoli Student Union 303

**Phone Number:** 303-315-7288

**Websites:** [www.ucdenver.edu/studentorganizations](http://www.ucdenver.edu/studentorganizations) [www.ucdenver.edu/leadership](http://www.ucdenver.edu/leadership)

**Email:** Please refer to websites for more information

Get involved with a student organization, student government or the campus newspaper. CU Denver has over 200 student organizations, honor societies, professional organizations and faith-based groups. We help students register with student organizations, and provide services, information, education, support, and advising to assist with the development and strengthening of students and student groups. In addition, we provide multiple opportunities for students to engage in practicing and developing their leadership skills. Leadership programs include diverse

leadership conferences including CO-Leads, a state wide multi-cultural leadership conference; and the Lynx Leadership Conference, a program designed to increase the leadership skills of CU Denver Students. We also provide leadership trainings that enhance the co-curricular experience on campus through programs such as Leadership On demand, a program designed for students involved in student organizations on campus; and Student Government Association, providing a voice for students on campus. We encourage students to take advantage of shared governance and increase the sense of community on campus through all of the leadership programs.

## **Office of Equity (Title IX: Sex Discrimination, Sexual Harassment and Sexual Misconduct)**

**Location:** Lawrence Street Center 12<sup>th</sup> Floor

**Phone Number:** 303-315-2567

**Website:** <http://equity.ucdenver.edu/>

**Email:** [equity@ucdenver.edu](mailto:equity@ucdenver.edu)

The Office of Equity exists to prevent, stop, and remedy sexual misconduct, discrimination, harassment, and related retaliation in our campus community. **We are working to make our campus a community in which Respect is Expected.**

### **The Sexual Misconduct Policy prohibits**

- sexual assault: non-consensual sexual intercourse;
- sexual assault: non-consensual sexual contact;
- sexual exploitation (such as taking or sharing intimate photos without consent);
- dating or domestic violence;
- gender-based stalking;
- sexual harassment;
- and any retaliation taken against those involved in the reporting process.

**The Nondiscrimination Policy** prohibits discrimination or harassment on the basis of race, color, national origin, pregnancy, sex, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation, or political philosophy.

To report an incident of sexual misconduct, discrimination, harassment, or retaliation or to request a training, please contact the Office of Equity at:

- **Phone number:** 303-315-2567
- **Email address:** [equity@ucdenver.edu](mailto:equity@ucdenver.edu)
- **Office address:** Lawrence Street Center, 12th floor, Denver, CO 80204
- **Mailing address:** Campus Box 134, P.O. Box 173364, Denver, CO 80217-3364.
- **Or visit our website for an online report and more information about our policies, procedures, trainings, and other resources:** [www.equity.ucdenver.edu](http://www.equity.ucdenver.edu)

## **Veteran & Military Student Services**

**Location:** Tivoli Student Union 124

**Phone Number:** 303-315-7300

**Website:** <http://www.ucdenver.edu/life/services/Veteran/Pages/vmsshome.aspx> **Email:** [vmss@ucdenver.edu](mailto:vmss@ucdenver.edu)

Veteran & Military Student Services (VMSS) is the initial contact point for student active service members, veterans and their families attending CU Denver. The main priority of the office is to verify U.S. Department of Veterans Affairs education benefit certification for eligible students, ensuring that each student meets the Veterans Administration requirements for attendance, course load, content, as well as all other regulations necessary to receive educational benefit payments. This office assists students with filling out Veteran Affairs paperwork and in solving problems associated with the receipt of Veteran Affairs related educational benefits. The VMSS provides student peer to peer mentoring, transition assistance into higher education, scholarships, mental health services that are specific to the military and transition issues, and career preparation through the Boots to Suits Program. The office also serves as a liaison for numerous campus and community resources.

## Women and Gender Center

**Location:** Tivoli Student Union 310

**Phone Number:** 303-315-7262

**Website:** [www.ucdenver.edu/wrc](http://www.ucdenver.edu/wrc)

**Email:** [WGC@ucdenver.edu](mailto:WGC@ucdenver.edu)

The Women & Gender Center (WGC) at CU Denver is committed to advancing issues of gender equity and supporting the gender-focused needs of students, faculty, and staff on the Auraria campus. The mission of the Women and Gender Center is to address gender inequities and foster a campus community that values inclusion, social justice, equity, and respect for everyone regardless of background and experience. We are committed to enacting intersectional feminism in our programming by exploring gender as it overlaps and interacts with the multiple identities that people inhabit across their lifespans. We serve all members of the CU Denver community, regardless of gender identity.

## Writing Center

**Location:** North Classroom 4014

**Phone Number:** 303-315-7355

**Website:** <http://writingcenter.ucdenver.edu>

**Email:** [writing.center@ucdenver.edu](mailto:writing.center@ucdenver.edu)

The Writing Center at CU Denver is a free resource available to all university students who wish to improve as writers. Services include in-person and online one-on-one appointments; an asynchronous Graduate Drop Box for graduate students; an asynchronous After Hours Drop Box for all students; workshops on a variety of topics (for example: citation, literature reviews, C.V.s, and more); and downloadable handouts, podcasts, and videos. Professional Writing Consultants will work on any type of writing

and any aspect of the writing process, including (but not limited to) idea-generation, organization, thesis development, source usage, and grammar. Students bring in documents ranging from resumes, personal statements, and research essays to theses, rhetorical analyses, and grant applications. All writing is welcome. Interested students can schedule appointments (required) online and get more information (hours, directions, etc.) about each of our 9 locations/services for students right from the homepage ([writingcenter.ucdenver.edu](http://writingcenter.ucdenver.edu)):

- CU Denver: NORTH 4014
- CU Anschutz: HSL 1204
- CU South Denver: Student Commons, 2nd floor, Liniger Building
- Auraria Library: Knowledge Market, 1st floor
- Business School: Cordillera Conference Room, 1st floor
- Campus Village at Auraria (residents only): Cyber Café, 1st floor
- Online (real-time) consultations
- An asynchronous Graduate Drop Box for graduate students
- An asynchronous After Hours Drop Box for all students

# GRADUATE SCHOOL POLICIES AND PROCEDURES

## Graduate School Policies & Procedures

Each graduate program should have a handbook or other similar resource that describes what is expected of its students because each program operates differently within the scope and boundaries set by the Graduate School Policies & Procedures. The GS Policies & Procedures provide a foundation of minimum requirements but programs are free to set higher expectations provided those expectations are clearly communicated and applied uniformly.

Please click [here](#) to view the general Graduate School Policies & Procedures.

Listed below are all the schools/colleges and programs that are governed by the Graduate School Policies & Procedures:

### College of Architecture and Planning

- Design and Planning PhD
- Historic Preservation MS
- Urban Design MUD

### College of Arts & Media

- Recording Arts MS

## **Business School**

- Computer Science and Information Systems PhD

## **School of Education and Human Development**

- Education and Human Development PhD
- Leadership for Education Equality EdD
- School Psychology (PsyD)

## **College of Engineering, Design and Computing**

- Bioengineering MS
- Bioengineering PhD
- Civil Engineering MS
- Civil Engineering MENG
  - Offered in civil engineering, computer science & engineering, electrical engineering and mechanical engineering
- Civil Engineering PhD
- Computer Science & Information Systems PhD
- Computer Science MS
- Electrical Engineering MS
- Electrical Engineering MENG
- Engineering and Applied Science PhD
- Mechanical Engineering MS
- Mechanical Engineering MENG

## **College of Liberal Arts & Sciences:**

- Anthropology MA
- Applied Geography & Geospatial Science MA
- Applied Mathematics MS
- Applied Mathematics PhD
- Biology MS
- Chemistry MS
- Clinical Health Psychology PhD
- Communication MA
- Economics MA
- English MA
- Environmental Sciences MS
- Health and Behavioral Science PhD
- History MA
- Humanities MH
- Integrated Sciences MIS
- Integrative and Systems Biology, PhD
- Political Science MA
- Social Sciences MSS
- Sociology MA
- Spanish MA

## **School of Public Affairs**

- Criminal Justice MCJ
- Public Affairs PhD

# **UNIVERSITY POLICIES**

*Every organization, large and small, runs more smoothly when policies and procedures are in place. This chapter touches briefly on policies that are most important to students and their academic pursuits. The University of Colorado Denver's Policies and Guidelines website, [www.ucdenver.edu/faculty\\_staff/employees/policies/](http://www.ucdenver.edu/faculty_staff/employees/policies/), provides a complete list of policies for every facet of the organization, including those from other organizations that affect the Denver Campus, such as the Laws of the Regents and policies of the Auraria Higher Education Center.*

## **Academic Honor Code and Discipline Policies**

Policies related to academic credit and grades are explained in the Registration and Records chapter of this catalog.

### **University Policies**

**Phone:** 303-315-2724

**Website:** [http://www.ucdenver.edu/faculty\\_staff/employees/policies/pages/default.aspx](http://www.ucdenver.edu/faculty_staff/employees/policies/pages/default.aspx)

The Office of Policy and Efficiency - with input from system and campus policy owners - develops, oversees and maintains the University's system-wide policy-making process; facilitates the development, review, approval, and maintenance of University-wide policies.

#### **Policies include:**

- Inclusiveness and Non-Discrimination
- Anti-Violence Policy
- Sexual Harassment
- Drugs and Alcohol Policy
- For further information on University Policies please contact an individual via the information above.

### **Campus Policies**

**Phone:** 303-315-2102      **Email:** [policy@ucdenver.edu](mailto:policy@ucdenver.edu)

**Website:** [http://www.ucdenver.edu/faculty\\_staff/employees/policies/Pages/default.aspx](http://www.ucdenver.edu/faculty_staff/employees/policies/Pages/default.aspx)

The Campus Policy Office resides in the Provost Office. This office oversees all development, coordination, management, rescissions and archives for all CU Denver and CU Anschutz campus policies.

#### **Policies include:**

- Academic & Faculty Affairs
- Finance
- General Administration
- Human Resources
- Information Technology

- Research
- Student Affairs

For further information on campus-level policies please contact an individual via the information above.

## **Academic Integrity and Discipline Policies**

CU Denver Campus Policy 7050, Academic Integrity, defines academic misconduct and sets forth a uniform process for handling allegations of student academic misconduct at CU Denver. As members of the CU Denver community, students are expected to know, understand, and comply with the standards of the University and to accept the responsibility to maintain the highest standards of intellectual honesty and ethical conduct in completing all forms of academic work at the university. In particular, students must refrain from academic misconduct, defined in the policy as (1) a student's use of unauthorized assistance with intent to deceive an instructor or other person who is assigned to evaluate the student's work in meeting course and degree requirements, or (2) actions that interfere with the ability of the instructor to fairly judge the work of the student or other students. Academic integrity standards assist in promoting an academically sound, fair, and respectful community. CU Denver views the Academic Integrity process set forth in this policy as a learning experience that can result in growth and personal understanding of one's responsibilities and privileges within both the CU Denver community and the greater community. All students must adhere to these standards. Students who allegedly violate these standards and commit academic misconduct will be subject to the procedures described in this policy. Academic dishonesty is academic in nature, and students are encouraged to contact their academic advisor for details of the campus policy and procedures centered on the academic integrity policy.

### **Forms of Academic Dishonesty (Refer to Campus Policy 7050 for more detailed definition)**

Students are expected to know, understand and comply with the ethical standards of the university. Academic dishonesty is defined as a student's use of unauthorized assistance with intent to deceive an instructor or other such people who may be assigned to evaluate the student's work in meeting course and degree requirements. Examples of academic dishonesty include, but are not limited to the following:

#### *A. Plagiarism*

Plagiarism is the use of another person's distinctive ideas or words without acknowledgment. The incorporation of another person's work into one's own requires appropriate identification, regardless of the means of appropriation.

#### *B. Cheating*

Cheating involves the possession, communication or use of information, materials, notes, study aids or other devices not authorized by the instructor in an academic



exercise or communication with another person during such an exercise for the purpose of obtaining or providing unauthorized information or materials.

*C. Fabrication and Falsification*

Fabrication involves inventing or counterfeiting information, i.e., creating results not obtained in a study or laboratory experiment. Falsification, on the other hand, involves the deliberate alteration or changing of results to suit one's needs in an experiment or other academic or creative exercises.

*D. Multiple Submissions*

This is the submission of academic work for which academic credit has already been earned, when such submission is made without instructor authorization.

*E. Misuse of Academic Materials*

The misuse of academic materials includes but is not limited to the following: stealing or destroying library or reference materials, computer programs, another student's notes or materials or illegitimate possession of examination materials, forgery, falsification of university documents.

*F. Complicity in Academic Dishonesty*

Complicity involves knowingly allowing or contributing to another's academic misconduct.

**School/College Specific Policy**

*Business School*

Students are expected to conduct themselves in accordance with the highest standards of honesty and integrity. Cheating, plagiarism, illegitimate possession and disposition of examinations, alteration, forgery, falsification of official records and similar acts or any attempt to engage in such acts are grounds for suspension or expulsion from the university. In particular, students are advised that plagiarism consists of any act involving the offering of the work of someone else as the student's own. It is recommended that students consult with the instructors as to the proper preparation of reports, papers, etc., to avoid this and similar offenses. Also, actions that disrupt the administrative process, such as misrepresentation of credentials or academic status, other forms of deception or verbal abuse of university staff are grounds for suspension or probation. All discovered acts of dishonesty must be referred to the Business School's Internal Affairs Committee.

*College of Engineering, Design and Computing*

Students are expected to conduct themselves in accordance with the highest standards of honesty and integrity. Cheating, plagiarism, illegitimate possession and disposition of examinations, alteration, forgery or falsification of official records and similar acts or attempts to engage in such acts are grounds for suspension or expulsion from the university.

In particular, students are advised that plagiarism consists of any act involving the offering of the work of someone else as the student's own.

The college has a Student Honor Code that all students are required to sign when they meet with their academic advisor. The code outlines the college's expectations of its students and faculty in establishing and maintaining the highest standards in academic work and is available on the college website (<http://engineering.ucdenver.edu>) under Student Services > Policies and Forms.

In addition, the college has a committee on discipline that hears cases of alleged violations of academic ethics and recommends disciplinary action. In a case of proven academic dishonesty/misconduct, the committee may invoke penalties that may include probation, suspension or expulsion. In a case of suspension or expulsion, a distinction may be placed on a student's academic record indicating the action was due to academic dishonesty/misconduct. Students who suspect or observe violations of academic ethics should report them to their instructor, the department chair or the Office of the Dean.

## **Academic Probation and Suspension Policies**

Academic probation and suspension policies vary by school/college. If your program falls under the auspices of the Graduate School, please see the Graduate School Rules. Otherwise, please contact your individual school/college for more information.

## **Registration**

### **Independent Study**

#### **School/College Specific Policy**

##### *College of Liberal Arts and Sciences*

Independent studies are faculty-mentored, individually structured courses or research or creative projects designed and scheduled outside of the standard course grid. Independent study allows for investigations beyond the structured curriculum and classroom and exploration of content material that closely relates to faculty and student interest. However, the College of Liberal Arts and Sciences does not guarantee that credit earned through an independent study will count toward graduation requirements or be accepted as transfer credits.

The CU Denver campus requires manual registration using a Special Processing Form for students participating in independent study. This form constitutes the course syllabus agreement between faculty and student. The Special Processing Form requires (1) project title, (2) short, detailed project description, including texts and practical

application of skills, and (3) explicit performance or grading criteria. The faculty should separately negotiate a schedule of meetings and deadlines with the student. The form is reviewed and approved by a CLAS Associate Dean/Assistant Dean prior to student registration.

The College faculty developed the following requirements relating to student and faculty participation in independent study. Faculty seeking to waive or modify any of the policies below should work with the appropriate CLAS Associate Dean/Assistant Dean.

### **Student Requirements**

- Enrollment as a CLAS student or, if enrolled in another major/minor, school/college, or institution, signed authorization on the Special Processing Form by the advisor/chair/dean of the originating
- school/college or institution prior to review by the CLAS associate or assistant dean.
- Graduate student status for 5840 (or higher), junior or senior status for 4840, sophomore status for 2840.
- Minimum GPA of 2.5 for undergraduates and 3.0 for graduate students.
- Submission of the Special Processing Form prior to the third week of a regular semester. After the third week, a petition to add is required. Summer and intensive sessions will have different deadlines.

### **Faculty Requirements**

- CLAS tenured, tenure-track, Clinical Teaching Track, Senior Instructor, or Instructor rank.
- CLAS graduate faculty status for faculty sponsoring graduate independent study.
- Direct, not indirect, supervision by the designated CLAS faculty member.
- For instructor-rank faculty, approval by the department chair, though all untenured faculty should limit the number of independent studies and are advised to consult with the chair before taking them on.

### **Project Requirements**

- CLAS discipline or directly discipline related content, though may be interdisciplinary.
- Unique or individually executed project content for each student.
- Not available as, or part of, a structured course offered during the same term.
- 3 student participation hours per week for each credit hour requested. Note: 4:1 ratio in summer.

## **Student Bill of Rights**

The University of Colorado Denver subscribes to the Student Bill of Rights as defined in HB 01-1263. Students enrolled in public institutions of higher education shall have the following rights:

- (a) Students should be able to complete their associate of arts and associate of science degree programs in no more than sixty credit hours or their baccalaureate programs in no more than one hundred twenty credit hours unless there are

- additional degree requirements recognized by the commission;
- (b) A student can sign a two-year or four-year graduation agreement that formalizes a plan for that student to obtain a degree in two or four years, unless there are additional degree requirements recognized by the commission;
- (c) Students have a right to clear and concise information concerning which courses must be completed successfully to complete their degrees;
- (d) Students have a right to know which courses are transferable among the state public two-year and four-year institutions of higher education;
- (e) Students, upon completion of core general education courses, regardless of the delivery method, should have those courses satisfy the core course requirements of all Colorado public institutions of higher education;
- (f) Students have a right to know if courses from one or more public higher education institutions satisfy the students' degree requirements;
- (g) A student's credit for the completion of the core requirements and core courses shall not expire for ten years from the date of initial enrollment and shall be transferable.

## **Student Code of Conduct**

The following section is based in part on Regent Law 7.B.3. The behaviors listed below are prohibited, as are attempts to commit, aid, abet, or incite others to engage in behavior prohibited by the code of student conduct. All behaviors contained in this code of conduct are subject to the conduct process. Engaging in retaliatory acts against a person who reports an alleged violation of the code or testifies, assists, or participates in a conduct proceeding or investigation is a violation of this code.

1. Assaulting or physically abusing another person or being involved in brawling.
  - In the case of a student who is found responsible via the conduct process to have caused severe injury or bodily harm, the minimum sanction shall be suspension. Severe injury and bodily harm includes but is not limited to the following: broken bones, concussions, lacerations, etc.
2. Threatening or endangering the mental and/or physical health or safety of a person.
3. Public Exposure: Public exposure includes deliberately and publicly exposing one's intimate body parts, public urination, defecation, and public sex acts.
4. Non-Gender/Sex-Based Stalking: Means directly or indirectly through another person, repeatedly following, approaching, contacting, placing under surveillance or making any form of communication with another person, a member of that person's immediate family or someone with whom that person has or has had a continuing relationship, whether or not a conversation ensues in a manner that would cause a reasonable person to, (a) fear for his or her safety or the safety of others or; (b) suffer substantial emotional distress, including causing a person to respond by altering their activities.
5. Hazing: Any action or situation that recklessly or intentionally endangers the health, safety, or welfare of an individual for the purpose of initiation, participation, admission into or affiliation with any organization at the university. Hazing includes, but is not limited to, any abuse of a mental or physical nature, forced consumption of any food, liquor, drugs, or

substances, or any forced physical activity that could adversely affect the health or safety of an individual. Hazing also includes any activity that would subject the individual to embarrassment or humiliation, the willingness of the participant in such activity notwithstanding. (See Appendix 5)

6. Abusive Behavior, including verbal abuse, threats, intimidation, coercion, or other behavior which has caused a person substantial emotional distress and where the circumstances would cause a reasonable person to suffer substantial emotional distress
  - This policy should not be construed, and will not be enacted, to deny any student the right of free speech and expression.
7. Bullying: Severe aggressive behavior likely to intimidate or intentionally harm, control, or diminish another person, physically or mentally (that is not speech or behavior otherwise protected by the First Amendment)
  - Cyber-Bullying occurs when an individual is tormented, threatened, harassed, humiliated, embarrassed, or otherwise targeted by another person using the internet, interactive and digital technologies or mobile phones.
8. Violating any federal, state, or local law or university regulation or policy. University policies may include but are not limited to:
  - Nondiscrimination Procedures
  - Ethical Use of Computing Policy
9. Interference, Obstruction, or Disruption of University Activity: Materially and substantially interfering with, obstructing, or disrupting a university activity.
  - University activities include, but are not limited to, all normal university activities, such as teaching, research, recreation, meetings, public events, and disciplinary proceedings.
  - This prohibition includes, but is not limited to, the following: behavior disruptive of university functions; Behavior resulting in injury to persons or damage to property on the campus; and interference, obstruction, or disruption of the freedom of movement of students, or other members of the university community and their guests. Interference in any manner with the public or private rights of citizens, Behavior that threatens or endangers the health or safety of any person, and damage to property are prohibited.
10. Interfering with, obstructing, or disrupting police or fire responses. This prohibition includes, but is not limited to:
  - Resisting arrest.
  - Failing to abide by the directions of a peace officer.
  - Tampering with, impairing, disabling, or misusing fire protection systems such as smoke detectors, fire extinguishers, sprinklers, or alarms.
  - Failing to evacuate during a fire alarm.
  - Arson/setting fires.
11. Failing to comply with the direction of university and Campus Village employees who are performing their duties. Students are required to comply with instructions or directions given by university and Campus Village employees.

12. Knowingly providing false information to university employees, student conduct educators, or peace officers in performance of their duties. This section prohibits the use of false identification or the identification of another person to gain entrance to a facility or business. This also includes forging, altering, falsifying or misusing documents or records, or knowingly using/possessing forged, altered or false documents or records.
13. Retaliating against or discouraging an individual from participating in a University process, or acting in any way that would improperly influence a university conduct process.
14. Violating any policy or procedure listed in the Campus Village Apartments Resident Handbook while in Campus Village. See a complete list of Campus Village policies and procedures by clicking [here](#).
15. Unauthorized entry into, exit from, or presence in a University facility or on university property, including Campus Village Apartments, or property belonging to another.
16. Damaging University property or property belonging to another.
17. Engaging in, inciting, or arming someone for a riot or public disturbance (see Appendix 4)
18. Use of an electronic or other device to make an audio and/or visual recording of another person (including, but not limited to photographing, videotaping, filming, or audio recording) without the person's expressed permission when such recording causes the person to suffer substantial emotional distress and would cause a reasonable person to suffer substantial emotional distress. The storing, sharing, and/or distribution of such records by any means is also prohibited.
19. Possessing firearms, explosives, fireworks, incendiary devices, ammunition, or other weapons on campus except as permitted by law. "Weapon" as used in this provision may be an instrument of offensive or defensive combat; anything used, or designed to be used, in destroying, defeating, or injuring a person; an instrumentality designed or likely to produce bodily harm. A weapon may include, but not be limited to, the following: any firearm, slingshot, cross-knuckles, knuckles of lead, brass or other metal, any bowie knife, dirk, dagger or similar knife, or any knife having the appearance of a pocket knife, the blade of which can be opened by a flick of a button, pressure on the handle or other mechanical contrivance. A harmless instrument designed to look like a firearm, explosive, or dangerous weapon which is used by or is in the possession of a person with the intent to cause fear in or assault to another person is expressly included within the meaning of weapon. See Regents Policy 14.

*Note: Students, faculty, and staff possessing valid Concealed Handgun Permits are allowed to carry concealed handguns on campus in accordance with the law.*

20. Theft, including but not limited to, possessing property known to be stolen, or taking property of another without permission, even with an intent to return the property.
21. Possessing, using, providing, manufacturing, distributing, or selling drugs or drug paraphernalia in violation of law or University policies. Use or possession of marijuana, including medical marijuana used or possessed under Colorado Constitution Article 18, section 14, is strictly prohibited on campus. Any such use or possession is a violation of the student conduct code.

In addition, the state constitutional amendment authorizing individuals over the age of 21 to recreationally use marijuana (“Amendment 64”) does not change this prohibition or authorize a student to use marijuana. Federal law, including the Drug Free Schools Act, prohibits the presence or use of drugs, including marijuana. Thus marijuana use or possession, even if in compliance with Amendment 64, is prohibited on campus.

- Students may violate the student code of conduct if in the presence of prohibited behavior involving drugs. This includes students who knew, or reasonably should have known they were in the presence of drugs, or possessed, displayed, or was in the presence of drug paraphernalia.
- Misuse of legal substances; use of general products as intoxicants or “means to get high”; and inhaling or ingesting a substance (including but not limited to nitrous oxide, glue, paint, gasoline, solvent, etc.) other than in connection with its intended purpose is also prohibited.
- Driving while under the influence of drugs
- Use of a prescription drug other than by the person to whom the drug is prescribed and in accordance with the prescription is prohibited. This includes sharing drugs such as Ritalin or Adderall.
- Attending classes or university functions under the influence of drugs shall also be considered a violation of this code. This includes disruptive Behavior while under the influence of alcohol at official university functions.

22. Possessing, using, providing, manufacturing, distributing, or selling alcoholic beverages in violation of law or university policies.

- If an underage student is in Campus Village Apartments, this prohibition includes a student who knew, or reasonably should have known s/he was in the presence of alcoholic beverages, or possessed, displayed, or was in the presence of alcohol containers.
- Attending classes or university functions under the influence of alcohol shall also be considered a violation of this code. This includes disruptive behavior while under the influence of alcohol at official university functions where alcohol is served.
- Driving while under the influence of alcohol.

The health and safety of members of the University of Colorado Denver are the primary concerns of the university. The university is committed to ensuring that students obtain timely medical assistance for themselves and for their peers. To this end, we have instituted a “Good Samaritan” provision for drug, alcohol, and Intimate Partner violence related incidents. For more information about this provision please see Appendix 2.

The complete Code of Conduct, including a detailed explanation of the conduct process and sanctions, can be found online on the Student Conduct and Community Standards website.

You can also visit the Student Conduct and Community Standards office in the Tivoli Student Union Room 309.

# REGISTRATION & RECORDS

*CU Denver offers students a completely online system of planning their schedules and registering for classes. As a student, you are responsible for knowing the deadlines, rules, regulations, course loads, prerequisites and policies of the university, as well as those of the college or school in which you are enrolled, all of which is provided within this online catalog. Please refer to the Academic Policies section for more specific information related to records and registration.*

## Office of the Registrar

**Associate Vice Chancellor for Student Enrollment Operations & Compliance and**

**University Registrar:** Carrie John

**Office:** Student Commons Building, Suite 5005

**Telephone:** 303-315-2600

**E-mail:** registrar@ucdenver.edu

**Web site:** www.ucdenver.edu/registrar

## Academic Calendar

Consult the official CU Denver Academic Calendar to determine when registration will open and close for each term. CU Denver academic calendars for upcoming semesters can be found on the Registrar's Office webpage.

## Registration

Students should review the sections of this catalog that describe in detail the academic programs available at the Denver Campus.

The registrar's office will send an e-mail message to the student's university-assigned e-mail address, inviting the student to register, including registration information and a registration time assignment. Registration is by time assignment only. Students may register via the web on or after their assigned time.

## Web Registration and Student Information

Denver Campus students can register and obtain information regarding their academic and financial records by logging into their UCD Access portal.

Online registration allows the student to check the availability of specific courses prior to their registration time and to search for available courses by department, course level, or meeting time. If registration in a course is denied, the reason will be specified in UCD Access.



Student information available online currently includes mailing address verification (or change), admission application status, financial aid information, schedule by semester, grades by semester, unofficial transcript, account balance, online payment and degree audit (for some programs).

Additional information regarding programs, faculty, courses and policies are available through the home page: [www.ucdenver.edu](http://www.ucdenver.edu).

## **Definition of Full-Time and Part-Time Status**

Individual students receiving financial aid may be required to complete hours in addition to those listed below. The exact requirements for financial aid will be listed in the student's financial aid award letter.

### **Graduate degree and non-degree students:**

#### Full-time

- 5 or more semester hours
- 0 semester hours as a candidate for a degree
- 1 or more semester hours of thesis or dissertation (not master's reports or thesis preparation)

#### Half-time:

- 3 - 4.9 semester hours

### **Undergraduate students:**

- Full-time: 12 or more semester hours
- Half-time: 6 - 11.5 semester hours

### **Notes:**

Enrollment verification including full-time/part-time attendance can be certified beginning the first day of class.

Hours for calculating full-time/part-time attendance do not include interinstitutional hours, nor do they include hours on another CU campus, unless the student is enrolled through concurrent registration.

Students receiving veteran benefits should contact the Veteran Student Services manager for the definition of full-time status for summer sessions. Contact information: 303-556-2745 or [vaoffice@ucdenver.edu](mailto:vaoffice@ucdenver.edu).

Individual exceptions to the minimum graduate course-load levels are considered for financial aid purposes by the financial aid committee. Students must file a written appeal with the Office of Financial Aid.

## **Add/Drop**

Please review the current term's academic calendar for the most recent add/drop deadlines by visiting the registrar's website at [www.ucdenver.edu/registrar](http://www.ucdenver.edu/registrar).

## **Administrative Drop**

An administrative drop is implemented by university officials in the registrar's office or the dean's office. A student may be administratively dropped from one or more classes or withdrawn from all classes for any of the following reasons:

- failure to meet certain preconditions, including but not limited to:
  - class cancellations
  - failure to meet course prerequisites
- whenever the safety of the student, faculty member, or other students in a course would be jeopardized
- academic suspension, including but not limited to failure to attain or maintain a required GPA
- as a potential sanction for a violation of the code of student conduct
- disruptive behavior determined by the chair and/or associate dean or Office of Student Conduct and Community Standards to be detrimental to the progress of the course and the education of other students

## **Outstanding Debt/Administrative Drop Policy**

Students who owe a past due debt to the university in excess of \$300 will be administratively dropped from any future terms if past due amount is not paid in full before the Friday prior to the first day of classes of the next term.

## **Auditing Courses**

To qualify as an auditor for fall, spring or summer semester, a student must be 21 years of age or older or approved by the registrar. Auditors may not be registered for any other University of Colorado courses during the time they are auditing. Auditors are not eligible to audit courses if they are under suspension from the university or have outstanding financial obligations to the university.

The registrar's office does not keep any record of courses audited; therefore, credit for these courses cannot be established. Auditors may attend as many courses as they wish (except those courses with laboratories or where special equipment is used), provided they have received permission from each instructor.

An auditor's card is issued by the Bursar's Office after classes begin. An auditor's card is non-refundable. Auditors, whether resident or nonresident, pay for three semester hours of resident tuition for all audited courses during the fall, spring and or summer semester for class instruction and library privileges only. Auditors do not receive student parking privileges and are not eligible for other student services. This card should be presented to the instructor upon entering the class. For more information, contact the Bursar's Office.

## **Lifelong Learners Program**

Area residents who are 60 years of age or older may attend classes at the University of Colorado Denver on a non-credit/non-tuition basis during the fall and spring semesters. Note: Each academic department/unit may have its own policy regarding your acceptance into a specific class. Seniors may take any course (offered at the Downtown Campus) listed in the online course schedule except: courses which require laboratory or special equipment use, computer courses, courses offered through the Division of Extended Studies, courses with additional fees, CU online courses, CU Denver South campus or Anschutz Medical campus courses, and intensive and/or module courses (i.e. maymester, 6 week, or hybrid). Acceptance in class will be determined by the instructor, based on space availability, and the previous level of education obtained by the senior citizen student. Participants may register for classes beginning on the first day of class. The last day to register for a class via the SCP program is the second Friday after classes begin. Submissions after this day will not be reviewed. A limit of two courses may be taken per semester. Note: The instructor is NOT required to review written or oral exams, or assignments.

For more information please visit the Lifelong Learners webpage.

## **Candidate for Degree**

You must be registered for at least one course during the semester in which you take the comprehensive exam, defend your dissertation or thesis, or present your final project. If you are NOT registered for any other courses, you MUST register for CAND 5941 Candidate for Degree. You may only register for this course once.

To register for CAND 5940, Candidate for Degree, (you may NOT be registered for any other courses) obtain the class number from your department or program director. You will be billed at one credit hour of resident tuition plus the CU-SIS fee and the information technology fee. Students registered for CAND 5940 will be considered full-time for financial aid and enrollment verification purposes.

## **Course Load/Restrictions**

In most cases, students wishing to take more than 18 semester hours (12 in the summer session) must have the overload approved by the dean of their college or school. Consult the individual college or school for specific guidelines as to course-load restrictions.

## **No Credit**

Students may register for a course on a no-credit basis with the consent of their instructor and the dean of their school or college. No grade or credit is awarded. The transcript reflects the name of the course taken and an N/C notation.

## **Pass/Fail Procedure**

1. Students who wish to register for a course on a pass/fail basis (or to revert from pass/fail to graded status) may do so only during the drop/add period.
2. Up to 16 semester hours of course work may be taken on a pass/fail basis and credited toward the bachelor's degree. Only six hours of course work may be taken pass/fail in any given semester. (**Note:** Individual schools and colleges may have additional restrictions as to pass/fail credits. See the accompanying chart for an overview.)
3. Instructors will not be informed of pass/fail registration. All students who register for a pass/fail appear on the regular class roster, and a normal letter grade is assigned by the professor. When grades are received in the registrar's office, those registrations with a pass/fail designation are automatically converted by the grade application system. Grades of D- and above convert to grades of P. Courses taken pass/fail will be included in hours toward graduation. Pass grades are not included in a student's GPA. An F grade in a course taken pass/fail will be included in the GPA.
4. Pass/fail registration records are maintained by the registrar's office.
5. Exceptions to the pass/fail regulations are permitted for specified courses offered by the School of Education & Human Development, the extended studies programs and study abroad programs.
6. Graduate degree students can exercise the P/F option for undergraduate courses only. A grade of P will not be acceptable for graduate credit to satisfy any Graduate School requirement.
7. Students who register for a course on a pass/fail basis may not later (after the drop/add period) decide to receive a letter grade.

*Note:* many other institutions will not accept a P grade for transfer credit.

## **Module/Intensive Courses**

Students should contact the college/school for information on short-term courses offered each semester. Intensive, module, and off-cycle classes require the same amount of work and number of classroom hours as full-term classes. Intensive classes are less than five weeks. Module classes last five or more weeks, but less than full term. Off-cycle classes vary in length. Module/intensive classes may be added up until the first day of the class. After the first day of class, these classes may be added with the instructor's signature approval on a Schedule Adjustment Form. A Schedule Adjustment form may be required to drop these classes. Instructor approval is not required to drop the class within the first 15% of class meetings.

## **To Withdraw from CU Denver**

To withdraw from the University of Colorado Denver, students must drop all courses for the semester. Prior to census (see current academic calendar for census date), students must use the web registration system to drop courses. Courses dropped during this period are not recorded on the student's permanent record.

After the census date (see current academic calendar for census date), through the 10th week (fourth week for summer) students may withdraw from their courses using

the UCDAccess Portal. Courses dropped during this period will be recorded on the student's permanent record with a grade of W.

Courses dropped during this period will be recorded on the student's permanent record with a grade of W.

Students seeking to withdraw after the 10th week (fourth week for summer) must petition the associate dean of their school or college. A student who stops attending classes without officially withdrawing from the university will receive grades of F for all course work during that term.

Deadlines for dropping module and intensive courses appear in the student portal.

## **Medical Withdrawal**

A student who wishes to withdraw under the Medical Withdrawal Policy must withdraw from all classes. Additionally, international students must contact their assigned International Services Specialist to discuss visa implications associated with withdrawing. Students seeking to withdraw for non-medical reasons will need to review the withdrawal policies and procedures for their respective school or college. For more information, see The Office of Case Management.

## **Other Registrations**

### **Intercampus Enrollment with Other CU Campuses**

The Intercampus Enrollment Program is open to all CU Denver degree seeking students who are currently enrolled in CU Denver courses. This program helps students fulfill degree requirements so that they may graduate in a timely manner. Students who wish to utilize this program and enroll in courses at the Boulder or Colorado Springs campus concurrently, must meet with their Academic Advisor from their School/College at the Home (Denver) Campus to confirm that the course taken at a Host Campus is equivalent to the course needed to graduate, and to ensure that all required prerequisites/requisites are fulfilled.

Actively-enrolled CU Denver degree seeking students may be eligible for enrollment in up to two (2) courses OR six (6) credit hours, whichever is greater, at another CU campus, by submitting the Intercampus Enrollment and Policy Form to the Registrar's Office prior to the Add Deadline date of the Host Campus (Boulder/Colorado Springs). The Intercampus Enrollment and Policy Form can be obtained by accessing the CU Denver Registrar's Office website or by visiting the office in person.

Students who wish to utilize this program must meet the following requirements for eligibility:

- Must be currently enrolled in at least one (1) course at their home campus during the term in which they are seeking enrollment at CU Boulder/CU Colorado Springs.
- Students must have their Academic Advisor confirm that all requisites have been met by the student prior to enrollment in the requested Intercampus course(s).

- Courses requested through the Intercampus Enrollment Program must be Main Campus courses. Continuing Education courses are NOT eligible under any circumstance.
- Some Undergraduate & Graduate Students may be exempt from Home campus enrollment if seeking a degree in the following programs at the campus listed:
  - Applied Mathematics (PhD) - Boulder, Denver
  - Architecture & Planning, (PhD) - Boulder, Denver
  - Civil Engineering, (PhD) - Boulder, Denver
  - Computer Science (MS & PhD) - Boulder, Denver
  - Education Administration (All Careers) - Denver
  - Electrical Engineering - Boulder, Colorado Springs, Denver
  - Geography (MA) - Boulder, Colorado Springs
  - Master of Engineering - Boulder, Colorado Springs, Denver
  - Mechanical Engineering - Boulder, Denver
  - Psychology - Boulder, Colorado Springs, Denver
  - Public Affairs - Colorado Springs, Denver

Enrollment and the dropping of Intercampus Enrollment course(s) can only be performed by the student's Home Campus Registrar's Office.

Students enrolled for course(s) at a Host Campus are responsible for requesting the adding and/or dropping of courses within the host campus's deadlines, published on the Host Campus Academic Calendar.

Any questions regarding this program should be directed to the "Home Campus" Intercampus Enrollment Coordinator within the Registrar's Office.

## **Academic Records**

### **Grading System and Policies**

The following grading system and policies have been standardized for all academic units of the university.

#### **Grade Symbols**

The instructor is responsible for whatever grade symbol (e.g., A, B, C, D, F, I or IP) is to be assigned. Special symbols (NC and W) are indications of registration or grade status and are not assigned by the instructor. Pass/fail designations are not assigned by the instructor but are automatically converted by the grade application system, as explained under "Pass/Fail Procedure."

Standard Grades

Quality  
Points

<i>A = superior/excellent</i>	4
<i>A(-) =</i>	3.7
<i>B(+)</i> =	3.3
<i>B = good/better than average</i>	3
<i>B(-)</i> =	2.7
<i>C(+)</i> =	2.3
<i>C = competent/average</i>	2
<i>C(-)</i> =	1.7
<i>D(+)</i> =	1.3
<i>D =</i>	1
<i>D(-) = minimum passing</i>	0.7
<i>F = failing</i>	0

Instructors may, at their discretion, use the PLUS/MINUS system but are not required to do so.

I-incomplete-converted to an F if not completed within one year.

IP-in progress-thesis at the graduate level only.

P/F-pass/fail-P grade is not included in the GPA; the F grade is included; up to 16 hours of pass/fail course work may be credited toward a bachelor's degree.

NC indicates registration on a no-credit basis.

W indicates withdrawal without credit.

## **Incomplete Grade**

An I is an incomplete grade. Policies with respect to I grades are available in the individual college and school dean's offices.

An I is given only when students, for reasons beyond their control, have been unable to complete course requirements. A substantial amount of work must have been satisfactorily completed before approval for such a grade is given.

The instructor who assigns an I sets the conditions under which the course work can be completed and the time limit for its completion. The student is expected to complete the requirements by the established deadline and not retake the entire course.

It is the instructor's and/or the student's decision whether a course should be retaken. If a course is retaken, it must be completed on the Denver Campus or in extended studies classes. The student must re-register for the course and pay the appropriate tuition.

The final grade (earned by completing the course requirements or by retaking the course) does not result in deletion of the I from the transcript. A second entry is posted on the transcript to show the final grade for the course, with a notation that the course was 'originally graded as I.'

At the end of one year, I grades for courses that are not completed or repeated are changed to an F.

## **Grade Point Average (GPA)**

GPA is computed by multiplying the credit points per hour (for example, B = 3) by the number of semester hours for each course. Total the hours, total the credit points and divide the total points by the total hours. Grades of P, NC, \*\*\*, W, IP, and I are not included in the GPA. I grades that are not completed within one year are calculated as F in the GPA.

If a course is repeated, all grades earned are used in determining the GPA. Grades received at another institution are not included in the University of Colorado GPA.

Undergraduate, graduate and non-degree graduate GPAs are calculated separately. Enrollment in a second undergraduate or graduate program will not generate a second undergraduate or graduate GPA.

Students should refer to their academic dean's office for individual GPA calculations as they relate to academic progress and graduation from their college or school.

### **Sample GPA Calculation**

Grade Earned: **A**; Credit Points per Hour: **4.0**; x Credit Hours: **4.0** = Credit Points in Course: **16.0**

Grade Earned: **A-**; Credit Points per Hour: **3.7**; x Credit Hours: **4.0** = Credit Points in Course: **14.8**

Grade Earned: **B+**; Credit Points per Hour: **3.3**; x Credit Hours: **4.0** = Credit Points in Course: **13.2**

Grade Earned: **P**; Credit Points per Hour: **-**; x Credit Hours: **3.0** = Credit Points in Course: **- (excluded)**

Grade Earned: **F**; Credit Points per Hour: **0**; x Credit Hours: **3.0** = Credit Points in Course: **0**

**Total of 15 credit hours with 44 credit points, so  $44/15 = 2.93$  GPA**

## **Good Academic Standing**

### **Degree Seeking Students**



Students at the University are expected to maintain progress in their degree program, as defined by being in “good academic standing.” Good academic standing requires minimally a cumulative grade point average (GPA) of 3.0 on all University of Colorado course work.

## **Non-degree Seeking Students**

Continuation as a non-degree graduate student is contingent upon maintaining an overall GPA of 3.0.

Failure to maintain the required average will result in a non-degree student being suspended. The suspension is for an indefinite period of time and becomes part of the student’s permanent record at the university. While under suspension, enrollment at the university is restricted. For more information contact the dean’s office of the school /college you are enrolled in.

## **Final Grades**

Grades are normally available within two weeks after the end of the semester and can be accessed by logging into the UCD Access portal.

## **Graduation**

### **SCHOOL/COLLEGE SPECIFIC POLICY**

#### ***College of Liberal Arts and Sciences***

***The College of Liberal Arts and Sciences requires the following degree requirements for all graduate degree granting programs outlined below:***

All graduate degree programs must follow the Graduate School Policies and Procedures.

#### **The Master’s degree**

Minimum credits 30, at least 24 credits must be completed at 5000 level or above.

If the program has a thesis, research paper or internship option as the culminating requirement, the thesis/research paper must count for three to six (3-6) credits, unless specified otherwise by individual programs. Independent study course work cannot exceed 20 percent (6 credits) of the 30 credits of coursework required for the Master’s degree.

#### **The Doctoral degree**

Minimum credits 60, 30 must be coursework related and 30 must be dissertation credits. All courses must be completed at 5000 level or higher. ***(All students should check the***

***specific requirements of their Program, since some Programs have adjusted their credit hour requirement to meet national standards)***

### **The certificate**

Graduate certificates require a minimum of 9 credit hours (in any discipline).

No more than 3 credits may be earned at the undergraduate level.

Because a certificate is a CU certification of a student's specialized knowledge in an advanced subject matter, all courses in a certificate program are expected to be taken in residency at UC Denver.

Minimum GPA of 3.0 with no course below a B- for a graduate certificate

A single course may not fulfill more than two graduation requirements.

### **Graduates**

Students on the Denver Campus must file an application for candidacy with their graduate school office and complete an intent to graduate application found on the Office of the Registrar's Web page under Degree Planning between the first day of registration for the term and the last day of drop/add. Check with your school for more information. Students will not be officially certified to graduate until a final audit of the student's record has been completed, approximately six weeks after the end of the term. After students have been certified to graduate, they must reapply to return to CU Denver.

### **Commencement**

In early March, informational brochures will be mailed to students eligible to participate in the May spring-semester commencement. In early October, information regarding the December commencement will be mailed to students who graduated in the summer term or expect to graduate in the fall term. Information will be provided about ordering special display diplomas, fittings for caps and gowns and obtaining diplomas and transcripts with the degree recorded. This information is also available at [www.ucdenver.edu/student-services/graduation/Pages/Graduation.aspx](http://www.ucdenver.edu/student-services/graduation/Pages/Graduation.aspx).

### **Official Transcripts**

The official transcript includes the complete undergraduate and graduate academic record of courses taken at all campus locations or divisions of the University of Colorado. It contains the signature of the registrar and the official seal of the university.

Official transcripts with posted grades for any given semester are available approximately three weeks after final exams. A transcript on which a degree is to be recorded is available approximately eight weeks after final exams.

For Denver Campus students, transcripts may be ordered through the online ordering portal by visiting [www.ucdenver.edu/transcripts](http://www.ucdenver.edu/transcripts).

Transcripts are prepared when a student submits an order online. A student with financial obligations to the university that are due and unpaid will not be granted a transcript. The official PDF transcript is delivered within twenty-four hours, and mailed transcripts are processed within one business day. Rush service is available and processed within one business day.

## **FERPA**

### **FERPA: FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT**

FERPA is a federal privacy law that protects students' educational records. Under this law, students have three primary rights:

- Inspect and review their education records.
- Seek to amend incorrect education records.
- Have some control over the disclosure of information from their education record.

FERPA directory information is information contained in a student's education record that generally would not be considered harmful or an invasion of privacy if disclosed. Under current CU Denver policy, the following information is designated as directory information:

- Student name. If provided, a preferred name will be used when there is not a documented business or legal reason to provide a student's primary name. Students may also select a diploma name for graduation and commencement materials.
- Hometown (city, state).
- Campus email address.\*
- Dates of attendance.
- Previous educational institutions attended.
- School/college or division of enrollment.
- Majors, minors and field of study.
- Classification level (e.g., freshman, sophomore, graduate student).
- University-recognized honors and awards.
- Degree status (e.g. expected graduation date and/or conferral dates/terms).
- Enrollment status.
- Employment related to student status (e.g. teaching assistant, resident assistant or work-study) and dates for positions held.
- Participation in officially recognized activities/sports, including height and weight of athletes.
- Photos and videos taken or maintained by the university.

\*Campus email addresses are only disclosed to requestors who agree not to use them for solicitation.

Although these items are designated by CU Denver as directory information, only a limited amount of this information is routinely disclosed by CU Denver university officials. The university retains the discretion to refuse disclosure of directory information if it believes such disclosure would be an infringement on student privacy rights.

Students may ask the University not to publicly disclose directory information. Be aware, however, if you are seeking employment, the Registrar's Office cannot release your enrollment, degree status or major to anyone unless you come to the Registrar's Office with a photo ID.

Forms to prevent disclosure of directory information can be obtained at the Registrar's Office, located in the Student Commons Building, or via the Registrar's website at [www.ucdenver.edu/registrar](http://www.ucdenver.edu/registrar).

Information that is never released without your consent includes grades, tuition/fees owed, financial aid, etc. If you would like to give permission to someone else to have access to that information, you can submit a Release of Confidential Information Form to the Office of the Registrar. This form also must be submitted in person.

More information about FERPA can be found in the University Catalog. If you have questions regarding your rights under FERPA, please contact the Office of the Registrar.

Denver Campus:

Phone: 303-315-2600

Fax: 303-315-2550

Email: [registrar@ucdenver.edu](mailto:registrar@ucdenver.edu)

Website: [www.ucdenver.edu/registrar](http://www.ucdenver.edu/registrar)

# COLLEGE OF ARCHITECTURE AND PLANNING

## **Dean**

Nan Ellin

## **Associate Dean of Academic Affairs**

Jody Beck

## **CONTACT**

303-315-1000

Fax: 303-315-1050

[CAP@ucdenver.edu](mailto:CAP@ucdenver.edu)

## **Mailing Address**

Campus Box 126

P.O. Box 173364

Denver, CO 80217-3364

## **Location**

CU Denver Building

1250 14th Street, Suite 2000

Denver, CO 80202

## Overview

The College of Architecture and Planning offers the only accredited degrees in architecture, urban and regional planning, and landscape architecture in the State of Colorado as well as the only master's degrees in historic preservation and urban design, and the only doctoral degree in design and planning. The college offers a Bachelor of Science in Architecture degree and graduate programs for over 700 students. Programs are accredited by the Landscape Architectural Accreditation Board (LAAB), National Architectural Accrediting Board (NAAB) and Planning Accreditation Board (PAB). Many students intending to enter the design and planning professions complete the college's undergraduate degree as preparation for our graduate-level professional programs. Those who already hold an undergraduate degree in an unrelated field are also eligible for admission into our graduate programs. We offer graduate certificates in Design Build, Historic Preservation (with History), Integrated Construction Management and Leadership (with Business and Engineering) and Geospatial Information Science, as well as ten options for earning dual graduate degrees. In addition, students can earn a certificate from the Institute of Classical Architecture and Art, by taking focused courses in this area. With an outstanding faculty committed to excellence in teaching, research, scholarship and creative work, the college provides students with opportunities beyond the classroom including study abroad, internships, mentorships, and participation in design and planning competitions. The College of Architecture and Planning ignites evolution that enriches places for people and the planet through learning by doing, practicing co-creation, and valuing the unique spark of each person as well as the full range of professional and historical traditions.

## College Facilities

The college is located at 1250 14th Street in downtown Denver, on the northeastern edge of the Auraria Campus on Larimer Square. This favorable location gives easy access both to the extensive campus facilities and the urban dynamism of Denver's lively lower downtown. Most of the major professional design offices in Denver and many planning firms and agencies are nearby, offering many opportunities for contact between students and practitioners. College facilities include studio spaces for students, lecture and seminar rooms, design jury spaces, exhibition spaces and faculty offices. Students have access to our well-equipped and well-maintained 3,000-square-foot Design Fabrication Lab that houses a full-scale furniture-making shop, model-making tools, a large spray booth and four laser cutters. An annex adjacent to the building provides additional shop space, plasma cutters, and a 5-AXIS CNC Router. The Visual Resource Center (VRC) provides access to a variety of photographic and audiovisual equipment, two portfolio photography studio rooms, and digital image collections. There are two computer labs focused on computer aided design (CAD), computer 2-D and 3-D imaging and analytic tools for planning. These computer labs include Windows PCs and Macs, small and large format scanners, large format plotters, laser printers and computer data projection devices. All systems are 100base T Ethernet / Internet savvy and accessible 24 hours a day in secure rooms. Find more details about college

facilities on the website. Also associated with the college is a geographic information systems (GIS) computer laboratory, open to all CU Denver students.

## **Computing in the College**

The College of Architecture and Planning requires all incoming graduate students to acquire and use their own computers and software applications in their studies. Neither the College nor the University endorses or requires you to buy a computer from a particular vendor or manufacturer. In general, students widely use products like Microsoft Office for word processing, e-mail, presentations and spreadsheet applications. Consult with instructors or view course syllabi regarding specific software application (program) requirements for imaging, CAD, GIS, modeling or rendering before you buy them. Software requirements for incoming students in all masters programs are per department recommendation, and otherwise stipulated by the course syllabus. For further information, consult the college website.

## **Graduate Programs**

### **Learning Experiences**

Learning experiences address real issues facing designers and planners as they create healthier, more sustainable, more meaningful environments. Through hands-on education, CAP students learn how to apply knowledge to real-world projects. The faculty and students are extensively engaged with Colorado communities, in service learning and applied research. Students have built award-winning solar-powered homes; discovered ecological design principles in Colorado ranches; helped re-envision the I-70 corridor through north Denver; proposed ways for communities to recover from natural disasters; and designed learning landscapes for all 96 Denver elementary school playgrounds. The award-winning Design Build program has developed projects as varied as micro cabins for the Colorado Outward Bound School, environmentally sustainable homes in the Navajo Nation, schools in Guatemala and Nicaragua, a performing arts stage for a mountain community, and outdoor classrooms for urban farming education and environmental groups.

### **Special Activities**

The college provides a diverse range of opportunities that enrich and enhance the education of its students. Through activities and functions - including a lecture series, design juries, exhibitions, publications and active student organizations - the college encourages contact among students, faculty and members of the design professions. The college is a leader in providing international study opportunities. In addition to numerous study abroad courses, there are collaborative design studios with Dar Al-Hekma University in Saudi Arabia, and a summer urban design studio that has been held in Copenhagen, China's Shanghai-Nanjing corridor, and Greece. The Bixler International Initiatives encompass travel opportunities, scholarships, lectures, and

exhibitions. The college supports an active and focused internship program for its students, giving them access to elective internship opportunities in the Denver metropolitan area and beyond. There are extensive opportunities for civic engagement, including through paid internships at the college's Colorado Center for Community Development (CCCD), Center of Preservation Research (CoPR), and Colorado Center for Sustainable Urbanism (CCSU).

## **Scholarships/Financial Aid**

Graduate students in the college have access to a number of scholarships and other financial assistance funds. Some are based on need, others on performance and still others are specifically intended to provide enrichment opportunities. Some of these funds are provided by the institution itself, while others are provided by external sources like the American Institute of Architects Architectural Education Foundation, the American Planning Association and the Associated Landscape Contractors of Colorado. For further information on scholarships and graduate tuition awards, visit the college's website. For information on federal and state financial aid, contact the Office of Financial Aid at the University of Colorado Denver or visit its website.

## **Admissions for Graduate Programs**

### **Application Deadlines**

For Fall Semester:

- Master of Architecture Program (MArch): January 15
- Master of Landscape Architecture Program (MLA): February 1
- Master of Urban and Regional Planning Program (MURP): January 15
- Master of Science in Historic Preservation Program (MSHP): Priority Deadline March 15
- Master of Urban Design Program (MUD): Priority Deadline February 15, Final Deadline March 15
- PhD in Design and Planning Program (PhD): February 1

Decision notification dates vary by program.

For Spring Semester:

- We do not offer spring admissions for any graduate programs.

### **General Requirements**

The college periodically updates admissions deadlines and application procedures. Please visit the college website to view current deadlines, application procedures and required materials.

Applicants to the College of Architecture and Planning graduate programs are required to submit the following credentials:

- University of Colorado Denver online application.
- Official transcripts from each institution the applicant has attended excluding study abroad institutions where the courses are included on the home institution transcripts.
- A statement of purpose that addresses career objectives and reasons for pursuing the intended program of study.
- A portfolio of creative work - required for Architecture, Landscape Architecture and Urban Design. Suggested for Historic Preservation for students with prior design experience.
- A sample of writing or a work project - required for Urban and Regional Planning.
- Three letters of recommendation.
- Graduate Record Exam (GRE) scores are encouraged for the Urban and Regional Planning program.
  - However, if you are applying to the Urban and Regional Planning program and your GPA is below 3.0, you must submit GRE scores.
- Graduate Record Exam (GRE) scores are highly advised if your GPA is below 3.0 and you are applying for the Architecture, Landscape Architecture, Historic Preservation or Urban Design programs.
- GRE scores are strongly encouraged for applicants to the PhD program.
- You must hold at least a bachelor's degree for admission to all professional master's programs. For admission to the Master of Urban Design program, a prior professional degree - normally the master's - is required in addition to a bachelor's degree.
- Application fee. Nonrefundable (\$50, U.S. residents; \$75, International applicants).
- English language proficiency scores are required for international applicants when English is not their first language. Please see the International Admissions website for current minimum score requirements.

## **Confirmation Deposit**

A nonrefundable confirmation deposit of \$150 is required to secure an applicant's place in the college. The deposit is due at the time the applicant accepts the program's offer of admission. The deposit will be applied to the first semester's tuition when the student registers for classes. This deposit is in addition to the \$150 Registration Advanced Deposit that all students are required to pay to the Bursar's Office before the first semester that they register.

## **Academic Policies for Graduate Programs**

### **Academic Standing**

Students must maintain a minimum overall GPA of 3.0 in the graduate programs to remain in good standing and to graduate. If a student's GPA falls below a 3.0, then he or she will be placed on academic probation beginning the following semester. If the GPA remains below a 3.0 after the probationary semester, then he or she may be dismissed from the college.



## **Grade Policy**

In addition to maintaining a GPA of 3.0 or above, each program requires specific minimum grades which a student must earn in order to count a class towards their degree. Students should meet with their academic advisor or reference the student handbook to learn more about the minimum passing grades.

## **Grade Appeals**

Any student may appeal the grade he or she receives in a class within 30 days from the issuance of the grade. The student should first discuss the issue and adjustment sought with the relevant course instructor. If the course instructor does not reply within 30 days, the student submits a written appeal to the department chair. Within 30 days, the department chair shall process the appeal and prepare a written report explaining the reason(s) for the department recommendation. If the grade appeal still remains unresolved at the department level, the student submits a written request to the associate dean of academic affairs, who will direct the Academic Affairs Committee to review the appeal. If the grade appeal remains unresolved at the college level, the student may appeal to the dean.

## **Attendance and Timeliness of Work**

Students are expected to attend all meetings of classes. Excessive unexcused absences may result in a grade reduction at the discretion of the instructor. Absence from a class will be excused for verified medical reasons, religious obligations or for extreme personal emergencies. The student may be required to furnish evidence.

Students' assignments are to be completed in a timely manner. Any assignment turned in late may have its grade reduced by an amount set at the discretion of the instructor. An assignment may be turned in late without penalty for verified medical reasons, religious obligations or for extreme personal emergencies. Students must have their instructor's written permission to turn an assignment in late. Students with excused late work may turn in the assignment by the end of finals week without penalty. Otherwise, the grade "I" will be assigned at the discretion of the faculty.

## **Course Sequencing and Advancement**

Programs in the college are structured so that certain courses must be taken concurrently, others sequentially. Students will not be allowed to enroll in a course if its co-requisites or prerequisites have not been satisfied.

## **Originality of Work**

Students must submit their own work. Where other sources are used in a student submission, they are to be clearly identified and referenced. The university considers plagiarism and similar acts of falsification to be a serious matter that may result in

suspension or expulsion. Information on codes of conduct and grievance procedures are available from the university's Office of Community Standards and Wellness.

## **Retention of Student Work**

The College of Architecture and Planning may, with a student's written permission, retain student work submitted in fulfillment of class requirements for a period of time. This retained work is normally used to provide accrediting agencies with tangible evidence of performance, to serve as additional visual aid material in presentations to other students and to contribute to possible educational exhibits requested by the university community and the general public.

## **College of Architecture and Planning Courses**

[Click here to see a complete list of courses.](#)

## **Departments and Programs**

### **Programs**

#### **Certificate**

- Design Build Graduate Certificate
- Geospatial Information Science Graduate Certificate
- Integrated Construction, Management + Leadership Graduate Certificate

#### **Doctor of Philosophy**

- Geography, Planning, and Design PhD

#### **Master of Science**

- Historic Preservation MS

#### **Master of Urban Design**

- Urban Design MUD

## **Architecture**

### **Programs**

### **Master of Architecture**

- Architecture MArch

## **Landscape Architecture**

### **Programs**

#### **Master of Landscape Architecture**

- Landscape Architecture MLA

## **Urban and Regional Planning**

### **Programs**

#### **Master of Urban and Regional Planning**

- Urban and Regional Planning MURP

# **ARCHITECTURE**

## **Faculty**

### **Professors:**

Amir Ameri, PhD, Cornell University  
Julee Herdt, MArch, Southern California Institute of Architecture  
Michael K. Jenson, PhD, University of Edinburgh  
Laurence K. Loftin III, MArch, University of Virginia  
Marc Swackhamer, MArch, Rice University  
Ekaterini Vlahos, MArch, University of Colorado Denver

### **Associate Professors:**

Osman Attmann, PhD, Georgia Institute of Technology  
Robert H. Flanagan, MArch, University of Colorado Denver  
Christopher Koziol, PhD, University of Colorado Denver  
Taisto H. Mäkelä, PhD, Princeton University

### **Assistant Professors:**

Erik Sommerfeld, MArch, University of Colorado Denver  
Kevin Hirth, MArch, Harvard Graduate School of Design  
Matthew Shea, MArch, University of Colorado Denver

### **Associate Professor (Clinical Teaching Track):**

Barbara Ambach, MArch, Southern California Institute of Architecture

**Assistant Professors (Clinical Teaching Track):**  
Amir Alrubaiy, MArch, University of Colorado Denver

**Senior Instructor:**  
Ranko Ruzic, MArch, University of Colorado Denver

**Instructor:**  
Jo VandenBurg, MArch, University of Colorado Denver

Additional information about faculty in this department is available on the college's website.

## **Degrees**

The College of Architecture and Planning offers a pre-professional Bachelor of Science in Architecture (BSArch) degree and the professional Master of Architecture (MArch) degree which is fully accredited by the National Architectural Accrediting Board (NAAB).

# **LANDSCAPE ARCHITECTURE**

**Associate Chair:** Leila Tolderlund  
**Email:** leila.tolderlund@ucdenver.edu  
**Telephone:** 303-315-1028

## **Faculty**

### **Professors:**

Lois A. Brink, MLA, University of Pennsylvania  
Ann Komara, MLA, MArch Hist, University of Virginia

### **Associate Professor:**

Joern Langhorst, Diplom (MLA), University of Hannover  
Jody Beck, MArch, PhD, University of Pennsylvania

### **Assistant Professors (Clinical Teaching Track):**

Leila Tolderlund, MLA, University of Colorado Denver

### **Instructor:**

Emmanuel Didier, MLA, MArch, University of Virginia

Additional information about faculty in this department is on the college's website.

## **Overview**

The Master of Landscape Architecture program balances theory and practice to prepare students to create health, well-being and environmental resilience through design in the

public realm. Our fully accredited professional program takes full advantage of our location in the heart of Denver and the rapidly growing metro area. The program enables students to enter practice and offers distinctive opportunities for students to engage in meaningful projects that impact our communities and our built environment. We educate landscape architects to lead the design and planning process; successful graduates pursue diverse practices and occupations in public and private arenas around the world.

Our students study relevant issues through classes and immersive experiences that challenge them to think critically about the applications and implications for the work we do. While grounded in design and professional skills, the curriculum is structured to fluidly address evolving concerns for our profession, our communities and our environment through topics such as health and well-being, water in the west, food systems, and emerging sustainable practices.

## **The Degree**

The Master of Landscape Architecture (MLA) curriculum revolves around a sequence of design studios, supported by core content classes and a variety of seminar courses. We deliver a fully accredited Master of Landscape Architecture for first professional degree students and post-professional students (those already holding a Bachelor of Landscape Architecture or Bachelor of Architecture degree).

Our program balances theory and practice and emphasizes design to create health and well-being and environmental resilience through design in the public realm. The curriculum fosters an ethic of responsibility grounded in natural systems and processes and an understanding of cultural and community values. Students learn skills working on relevant urban and civic projects in both local and global contexts and at a variety of scales. Studios and courses engage current issues, define future trends, and explore the role of landscape architecture in a rapidly changing world. Throughout the program, our students learn and apply design and planning skills, approaches and technologies to enhance community, foster equity and environmental balance, conserve and regenerate resources, and create places that hold value for current and future generations.

Denver's vibrant professional design and planning community supports our students through guest lectures and participation in design reviews, internships and mentor programs, and opportunities to visit offices and meet practitioners and leaders in our fields.

## **Program Objectives**

The department has developed five broad program objectives in support of our educational mission. These objectives identify what students should know and be able to do by the time they graduate and are linked to a series of measurable student learning outcomes. The five categories are:

- **Design:** Students will be able to formulate questions and arguments about landscape and its role as a significant cultural medium, and determine processes and practices that lead to transformative actions based on ethical, communicative and content knowledge criteria.
- **Communication and Representation:** Students will be able to create and employ appropriate representational media to effectively convey ideas on subject matter contained in the professional curriculum to a variety of audiences, and to articulate and convey ideas orally and in writing.
- **Professional Ethics:** Students will be able to critically evaluate local and global ramifications of social issues, diverse cultures, economic and ecological systems, and professional practice as guiding principles for design thinking and implementation.
- **Content Knowledge:** Students will be able to develop a critical understanding and application of the histories, theories and practices of landscape architecture and its role in reflecting and shaping culture and environments.
- **Research:** Students will be able to develop and apply a diligent, systematic and critical inquiry in support of design and scholarship.

## Central Themes

The MLA program prepares students to address current and future problems and challenges in local, regional and global contexts. An issues-based approach ensures that students will be exposed to and participate in the development of new responses to emergent and ongoing crises and opportunities, emphasizing environmental and social justice as a key element for the design of livable, sustainable and resilient places and landscapes. Examples of this are deep in the department's work over the past twenty-five, with examples such as working for five years with the local community of the Lower 9th Ward in New Orleans addressing issues around recovery after Hurricane Katrina, and the Learning Landscapes program which successfully redesigned almost 100 schoolyards in Denver, an initiative which is now focused on Philadelphia schools. Recently we have addressed issues of water, food scarcity and urban agriculture in Denver, the redesign and recovery of post-industrial sites and mining landscapes throughout the state, and issues of health and livability in disadvantaged communities and neighborhoods. Many of these projects have involved multiple classes over several years, and have made major impacts on the places and communities they have engaged. Students are immersed in opportunities to not just learn, but to make meaningful change, and interact with community members and professionals from many different backgrounds and disciplines, gaining invaluable experience and skills in working and communicating in interdisciplinary teams.

## Big Thinking

We believe that the issues, challenges and opportunities landscape architects face are interrelated, spanning all scales from a small private yard to neighborhood to city to region to the world, and involve a wide range of social, cultural, ecological and

economic systems, requiring critical and creative thinking that transcends scales and is cross-, trans- and interdisciplinary.

## **Critical Issues**

We strongly believe that Landscape Architecture is uniquely positioned to make major contributions to the big and urgent questions and issues that affect human and non-human systems. Climate change, resource scarcity, water and food are as critical as the design and building of landscapes and places that are about more than just sustainability and resilience and provide opportunities for people to thrive.

## **Meaningful Change**

While the functioning and performances of human and non-human systems are critical, good design does more than just provide solutions to problems. It provides opportunities for people to interact with places over time, it empowers them to understand the dynamics that affect their environments and to participate in the ongoing processes of changing place and changing communities, thus becoming authors and co-authors of the places they shape and inhabit.

# **URBAN AND REGIONAL PLANNING**

**Chair:** Austin Troy

**Office:** CU Denver Building 330F

**Telephone:** 303-315-1000

**Fax:** 303-315-1050

## **Faculty**

### **Professors:**

Nan Ellin, PhD, Columbia University

Austin Troy, PhD, University of California, Berkeley

### **Associate Professor:**

Jeremy Németh, PhD, Rutgers University

Andrew Rumbach, PhD, Cornell University

### **Assistant Professors:**

Carrie Makarewicz, PhD, University of California, Berkeley

Manish Shirgaokar, PhD, University of California, Berkeley

**Assistant Professors (Clinical Teaching Track):**

Ken Schroepfel, MURP, University of Colorado Denver

Jennifer Steffel Johnson, PhD, University of Colorado Denver

Additional information about faculty in this department is available on the college website.

## Overview

The Department of Urban and Regional Planning at the University of Colorado Denver has evolved to become one of the strongest, most unique graduate planning programs in the United States, offering a real-world, experientially-oriented program that uses Colorado as a classroom and engages students with the community. It offers the Master in Urban and Regional Planning degree, the only accredited graduate planning degree in the state of Colorado.

We believe that successful city-building requires expertise, breadth, interdisciplinary understanding, and creativity. Our program looks beyond traditional professional silos and instead centers on issues at the forefront of planning practice. Our three Initiatives - Healthy Communities, Urban Revitalization, and Regional Sustainability - form the basis of our research, instruction, and community outreach.

We encourage all students to follow their passion and develop expertise in the areas that matter most to them. Our unique, self-directed curriculum that allows students to understand the breadth of the planning field while gaining the technical expertise demanded by the profession.

Our list of program faculty includes some of the most respected researchers and educators in the planning field, as well as top local planning practitioners, all of whom bring a wealth of experience to the classroom. All of our faculty make teaching a top priority.

Our presence in a College of Architecture and Planning ensures that our approach to planning education has a strong connection to design, and our location in the heart of downtown Denver offers students endless opportunities for experiential learning and interaction with the community.

## Program Mission and Values

Our vision is to be a national leader in educating skilled, engaged planners and creating vibrant, sustainable communities.

Inspired by our setting in the downtown of a thriving urban center in the dynamic Rocky Mountain region, our mission is to:

- Teach - Teach our students the knowledge, skills, and values they need to be confident, principled, and visionary planners, using Colorado as our classroom to engage students in real-world, experiential learning.



- Advance - Advance the field of planning through insightful, relevant research that directly informs policy and improves our built, natural, and social environments.
- Serve - Serve as a vital resource for communities and professionals, and help develop sustainable solutions to our region's complex planning challenges.

Several core values inspire all the work we do:

- Advocacy - We believe planners must be visionary in their work, politically engaged, and articulate proponents for positive change.
- Collaboration - We believe planners must understand and value the principles and perspectives of allied disciplines that participate in planning and city building.
- Engagement - we believe students should learn planning by interacting directly with professionals and the public to solve real-world planning challenges.
- Interdependency - We believe cities are inextricably tied to each other and to their ecological, regional and global contexts.
- Service - We believe our program should serve as a resource for planning professionals and the public by offering ideas, solutions, research, advocacy, and inspiration.
- Sustainability - We believe planning must be based on the principles of economic viability, environmental resiliency, and social equity.
- Urbanism - We believe in the potential of cities and towns to be the most efficient, equitable and inspiring forms of human settlement.

## **Our Faculty**

The faculty of the Department of Urban and Regional Planning consists of a purposeful mix of full-time tenured/tenure-track faculty, full-time clinical-track faculty, and a diverse group of part-time lecturers who keep one foot in the professional practice of planning and one in the classroom. The MURP program and its students benefit from the rich contributions of the scholarly research accomplished by our tenured/tenure-track faculty, and the practice-oriented instruction provided by our lecturers and instructors. To learn more about our MURP faculty members, please visit the college website.

## **Our Students**

Our commitment to our students extends across many areas: providing them with exceptional instruction and research-backed knowledge about planning; inspiring them to achieve great things in their personal and professional lives; exposing them to planning professionals, real-world planning situations, and state-of-the-art learning resources; and helping them choose their best academic and career paths through advising and mentoring.

## **Curricular Approach**

### **Program Features**

Our passion for teaching students the knowledge, skills and values they will need to be confident, principled, and visionary planners is reflected in the five key features we've integrated across our program and curriculum:

- **Physical Planning and Design** - We emphasize physical planning and design throughout our curriculum. Housed within the College of Architecture and Planning, we work closely with the College's Architecture, Urban Design, Landscape Architecture, and Historic Preservation programs to provide our students access to an expanded design-focused education.
- **Experiential Learning and Engagement** - Throughout the program, we provide significant opportunities for students to gain hands-on planning experience and have direct interaction with Colorado's planning professionals. We use Denver's diverse urban landscape as a real-world classroom for students to experience and analyze the built, social, political, and economic environments.
- **International Learning Opportunities** - We provide students the opportunity to study planning from an international perspective. By offering lecture courses that focus on global planning issues and studios that involve on-site coursework in other countries and collaborations with partner universities abroad, we help students expand their personal and educational worldview.
- **Innovative Planning Technologies** - We integrate innovative planning technologies into many of our program's courses and activities. We capitalize on the Denver region's entrepreneurial spirit and tech-focused economy by providing access to state-of-the-art planning technologies and teaching students how these tools can support the planning process.
- **Self-Directed Curriculum** - We offer our students the unique ability to craft an education suited to their career goals and personal interests. Students may choose any combination of elective courses, whether oriented towards one of our three Program Initiatives, a traditional specialization, or a generalist survey of the planning field.

## **Program Initiatives**

We focus on teaching students how to address critical issues and complex problems facing cities and regions today. For planners to take the lead in the city-building process, they need to understand the breadth of their field and know how to work in cross-disciplinary teams. Therefore we have structured our whole program - research, curriculum, faculty and student efforts, etc.- around three issue areas, which we call Initiatives.

Our three Program Initiatives (Healthy Communities, Urban Revitalization, and Regional Sustainability) represent issues at the forefront of the planning profession today and are also prominent topics in Denver and Colorado.

### **Healthy Communities**

The link between human health and the built environment has become a key factor in planning cities and regions. Colorado is known for its physically fit and active adult population, but our vulnerable populations face significant challenges such as childhood

obesity, disconnected neighborhoods, and lack of access to healthy food. Colorado has become a national leader in finding ways to plan and design healthier environments, and the MURP program's Healthy Communities Initiative is part of that effort. We work with partners at the local, state and federal levels, as well as the non-profit, educational and private sectors, to provide students comprehensive and interdisciplinary training in the tools, innovations and policies necessary for creating physically, socially, and economically healthy communities.

### **Urban Revitalization**

After decades of suburbanization, segregated land uses, and automobile-dependent development, the U.S. is now experiencing a resurgence of traditional urbanism and a reorientation toward central cities. Nowhere else is that phenomenon more evident than in Denver, where infill and transit-oriented development, historic preservation, adaptive reuse, and multi-modal transport are transforming the urban landscape. The MURP program's Urban Revitalization Initiative gives students opportunities to engage with local developers, planners, designers and policymakers to help revive and enhance established cities, retrofit the suburbs, and plan sustainable new developments.

### **Regional Sustainability**

Climate change, environmental degradation, resource scarcity, and sprawling development present critical challenges to planners worldwide. In the Rocky Mountain West, the impacts are evident in habitat loss, wildfire risk, and conflicts over water and energy resources. The MURP program's Regional Sustainability Initiative explores ways that Colorado and its neighbors can tackle these issues together. At the metropolitan level, Denver and its adjacent communities already serve as a model for regional planning and cooperation, exemplified by the visionary FasTracks transit program. Our Initiative draws on Denver's success in regional land use, transportation, economic development and resource planning to help students understand how built and natural environments can co-exist more sustainably at various regional scales.

### **Dual Degrees**

As part of encouraging among planners an appreciation for and a knowledge of the perspectives and practices of the other disciplines that participate in planning and city-building, we offer several dual degree opportunities, both with programs within the College of Architecture and Planning and with other units across the University of Colorado system. In every instance, the total credit requirement of the Dual Degree is considerably less than would be needed if each degree were independently pursued. The degrees that may be combined with the Master of Urban and Regional Planning include:

- Master of Architecture (MURP+MARCH)
- Master of Landscape Architecture (MURP+MLA)
- Master of Public Health (MURP+MPH)
- Master of Public Administration (MURP+MPA)
- Master of Business Administration (MURP+MBA)
- Master of Science degree in Historic Preservation (MURP+MSHP)

- Juris Doctorate (Law Degree) (MURP+JD-in collaboration with the CU Boulder Law School)

Information about the dual degrees can be found on the College website.

## **Programs**

- Urban and Regional Planning MURP

# ARTS & MEDIA

**Dean:** Laurence D. Kaptain, DMA and FRSA

**Associate Dean, Academic and Student Affairs:** Dane Webster, MS

**Assistant Dean, Budget and Financial Systems:** Karen Ludington, MBA

## **Contact**

### **Dean's Office**

Arts Building, Suite 177

1150 10th Street

Phone: 303-315-7400

Fax: 303-315-7404

CAM@ucdenver.edu

### **Mailing Address:**

College of Arts & Media

Campus Box 162

P.O. Box 173364

Denver, CO 80217-3364

### **National Center for Media Forensics:**

Campus Box 154

P.O. Box 173364

Denver, CO 80217-3364

ncmf@ucdenver.edu

## **About the College of Arts & Media**

### **Mission**

*Our mission is to effect change by preparing students to successfully pursue their passions. Our students acquire the skills they need to excel in an academically rigorous, experiential learning environment energized by creative exchange, real-world experience and diversity of voice.*

## **Core Values**

**Creative Excellence** - Academic and artistic rigor, creativity and innovation are bedrock principles of the CAM community and the cornerstone of how we define excellence. As champions of creative excellence in art making and artistic expression we support risk-taking, intellectual freedom and social responsibility.

**Discovery** - We believe in a culture of shared discovery. Our students learn by doing, and as emerging peers, are important contributors to the knowledge exchange. We value rigorous investigation, critical thinking, diversity, collaboration and invention.

**Denver** - We are committed to learning both inside and outside the classroom. The accessibility, diversity and cultural energy of Denver make CAM a better place to teach, work and learn, We strive to offer reciprocal experiences to the citizens of this great city and pay it forward by extending our reach and impact in the global community.

## **Programs of Study**

### ***Music & Entertainment Industry Studies***

- Master of Science in Recording Arts with Emphasis in Media Forensics
- CAM also offers a wide range of undergraduate degree options. Please see the **Undergraduate Catalog** or contact CAM@ucdenver.edu for more information.

## **Facilities**

CAM is constantly working to enhance and add to its facilities; see below for just some of the resources.

### **National Center for Media Forensics Facilities**

- Computer lab featuring multimedia analysis and processing software such as Cognitech, Ocean Systems, DAC, Agnitio, iZotope Rx Advanced, Adobe Creative Cloud, MATLAB, EnCase, Cellebrite and Cedar Cambridge hardware/software systems
- Security DVR and camera lab
- Graduate student workstations accessible from anywhere in the world via Remote Desktop Connection
- ENF (Electric Network Frequency) databases around the US

## **CAM General Academic Policies**

Please see the Academic Policies and the Information for Graduate Students pages of this catalog for academic policies that apply to all students at the university. The policies that follow apply specifically to all graduate students in the College of Arts & Media. Contact [ncmf@ucdenver.edu](mailto:ncmf@ucdenver.edu) with any questions about these or other college/university policies.

Students must also follow the policies outlined in the Graduate School Policies and Procedures. Visit the Academic Policies page in this catalog and click on the link to access this reference.

### **Adding/Withdrawing from Courses After Census**

Students wishing to add or withdraw from a full-term course after the semester add/drop deadline (census) should contact [ncmf@ucdenver.edu](mailto:ncmf@ucdenver.edu) for guidelines and instructions.

### **Grade Appeals**

For College of Arts & Media courses:

- When a student has questions or concerns regarding academic issues such as project grades, final grades, attendance policies, etc., the student is encouraged to speak directly with the faculty member teaching the course.
- If resolution or clarity of understanding is not reached, the following procedure should be followed:
  - The student contacts the chair of the department offering the course to discuss the concerns and his/her point of view.
  - The department chair speaks with the faculty member to ascertain the faculty member's point of view.
  - The department chair facilitates a meeting between the student and faculty member to discuss the issue.
  - If the student still has concerns after completion of these procedures, the student should contact the College of Arts & Media associate dean of academic and student affairs.

### **Incompletes**

The College of Arts & Media has strict policies for granting incomplete grades. They include but are not limited to the following:

- Reason for incomplete must be a verifiable circumstance beyond the student's control that made completion of the course impossible. The student must provide documentation.

- The majority of course requirements (75 percent) must have been completed with a passing grade to be eligible for an incomplete (B (3.0) for courses toward recording arts; B- (2.7) for courses toward media forensics).
  - Whether the student has successfully completed 75% of the course with a passing grade is determined by the instructor and based on the requirements listed in the syllabus.
- CAM course completion agreement must be signed by both the instructor and student, with final approval by the dean's/advising office.
- All course work must be completed within one calendar year of the end of the original course, unless an earlier deadline is specified.
  - The final grade (earned by completing the course requirements) does not result in deletion of the incomplete (I) from the transcript. A second entry is posted on the transcript to show the final grade for the course, with a notation that the course was 'Originally graded as Incomplete.'
  - At the end of one year, I grades for courses that are not completed will automatically revert to an F.
- Requests for a retroactive change from a letter grade to an incomplete will not be considered.

The student is responsible for requesting an incomplete grade and submitting all of the appropriate paperwork and obtaining approvals. Please contact [ncmf@ucdenver.edu](mailto:ncmf@ucdenver.edu) for additional information.

## **Curricular Changes and Course Substitutions**

Graduate students fall under the degree requirements that were in place when they first enrolled in their programs. If a program revises its curriculum, students have the option of following their original degree requirements or the revised curriculum. Courses under the original requirements may no longer be taught or may not be available for a set duration. In this case, the department faculty will approve reasonable course substitutions.

Course substitutions in the graduate degree must be approved by the designated area head in the specific program area, the department chair and/or possibly the associate dean. Please contact [ncmf@ucdenver.edu](mailto:ncmf@ucdenver.edu) for additional information.

## **Applying to Graduate**

Students expecting to graduate are required to apply to graduate via UCDAccess by the published deadline. Students who do not apply by the deadline must apply to graduate for the following semester.

Applications will be accepted starting the first day of the student's registration for the semester in which the student plans to graduate. Applications are due by 5 p.m. on census date (the drop/add deadline) of the semester in which the student is applying to graduate, as noted on the published academic calendar. Students are encouraged to

meet with a faculty advisor the semester before they intend to graduate to review graduation procedures and degree requirements.

Students who have not attended the university for one calendar year (three consecutive semesters, including summer term) or longer must gain readmission to the university prior to applying for graduation. It is the student's responsibility to apply with enough time for the readmission process to be finalized by the census date.

### **Academic Policies, Procedures and Curriculum Committee**

The CAM Academic Policies, Procedures and Curriculum Committee is the appellate committee for all student-related academic petitions, issues and appeals. The committee is responsible for the evaluation and interpretation of the approved academic policies of the college. Questions about the interpretation of policies may be directed to CAM Advising and Student Services. Procedures and petition guidelines are available at the CAM website or by emailing [ncmf@ucdenver.edu](mailto:ncmf@ucdenver.edu).

# MUSIC & ENTERTAINMENT INDUSTRY STUDIES

## **Contact Information**

**Chair:** Richard Strasser  
**Office:** Arts Building, Suite 288  
**Telephone:** 303-315-7449  
**Fax:** 303-315-7489

## **Faculty**

### **Associate Professors:**

David Bondelevitch, MFA, University of Southern California  
Lorne Bregitzer, MS, University of Colorado Denver  
Catalin Grigoras, PhD, University Politehnica Bucharest  
Erin Hackel, DMA, University of Colorado  
Sam McGuire, MS, University of Colorado Denver

### **Assistant Professors:**

Cecilia Wu, PhD, University of California Santa Barbara

Contact the Department of Music & Entertainment Industry Studies for information about additional graduate program faculty.



## **Graduate Programs**

Music & Entertainment Industry Studies offers a master of science program:

Master of Science in Recording Arts, Media Forensics Emphasis  
Please see the **Undergraduate Catalog** or contact CAM@ucdenver.edu for information about the Bachelor of Science (BS) in Music with emphases in performance, singer/songwriter, music business and recording arts.

# **BUSINESS**

**Interim Dean:** Gary Colbert

**Associate Dean of Faculty, Staff, and Operations:** Jahangir Karimi

**Associate Dean of Programs:** Ronald Ramirez

**Associate Dean of Infrastructure, IT, and Building:** Cliff Young

**Assistant Dean of Finance and Human Resources:** Connie Amen

**Assistant Dean of Programs:** Linda Brooker

**Chief of Staff:** Malena Brohm

## **Contacts**

### **Dean's Office**

Business School Building  
1475 Lawrence Street  
Denver, CO 80202  
303-315-8000  
Fax: 303-315-8040

### **Mailing Address**

The Business School  
Campus Box 165  
P.O. Box 173364  
Denver, CO 80217-3364

**Website:** <http://business.ucdenver.edu>

### **Admissions/Advising**

Undergraduate: 303-315-8110  
Graduate: 303-315-8110

## **Application Deadlines**

## **Graduate**

*Fall-* Domestic applications April 15

International applications March 15

*Spring-* Domestic applications October 15

International applications September 15

*Summer-* Domestic applications February 15

International applications January 15

Applications received after these dates may not be eligible for scholarships.

## **Executive MBA**

*Fall-* June 1

## **One Year MBA**

*Fall-* June 15

Located in the heart of the Rocky Mountain business community, the Business School at the University of Colorado Denver prepares students with the knowledge and skills necessary to become effective, responsible business professionals. We're able to achieve a standard of excellence by bringing together nationally recognized faculty and highly motivated, mature students in an intellectually challenging academic environment. CU Denver's Business School is a research institution. Because our faculty are nationally recognized for scholarly research as well as for their teaching skills, our students have the opportunity to be on the leading edge of business management theory and practice. Our class schedules and curriculum offer flexibility to meet your needs whether you plan to attend full or part time, day or evening. Whether you're an experienced working professional seeking an advanced degree or preparing for a new career in the business world, you'll gain the knowledge and perspective necessary to succeed in today's challenging business environment.

## **Educational Goals**

The Business School is committed to superb teaching, connecting theory to practice that focuses on:

- current and relevant knowledge and skills necessary for success in the highly competitive global business environment
- experience in cooperative and team-based work skills
- integrated professional and functional expertise
- sensitivity to cultural and ethnic diversity

Our graduate programs serve both traditional and nontraditional students who have extensive work experience. The MBA serves the needs of students who desire a general business education. The professionally oriented MS degrees serve the needs of students who desire greater specialization, particularly students who have already obtained an undergraduate business degree. Large numbers of our graduate students will be drawn from national and international locales.

Our undergraduate program, which serves both traditional and nontraditional students, leads to a baccalaureate degree in business with a liberal arts component. The program

is closely linked, through articulation agreements, to lower-division programs offered by Colorado's four-year and community colleges.

Key elements of our academic programs are the provision of top-quality career advising and placement services, as well as flexible schedules and programs to meet a wide range of student needs. We are committed to assisting our students' efforts to pursue rewarding careers.

## **Faculty**

Our nationally recognized faculty members are vigorous and enthusiastic about teaching and research. Faculty members hold degrees from the nation's leading business schools, including Berkeley, Harvard, Stanford, University of Chicago, University of Pennsylvania, UCLA and Yale. Many of them also bring years of valuable experience in private industry. Their interdisciplinary expertise, academic achievements, scholarly research and business experience provide students with a dynamic learning environment.

## **Scholarships and Financial Aid**

Many programs for financial aid are administered by the Office of Financial Aid. Call 303-315-1850 for detailed information.

Thanks to the generous support of the Colorado business community and others, the Business School has a significant number of scholarships to offer its students. Scholarships are awarded on the basis of merit and/or financial need. The amount of the award and the number of awards available vary.

Over 30 different scholarships are available to eligible Business School students, with multiple awards from most scholarships.

Further information about these scholarships, including eligibility criteria and application forms, may be obtained by visiting the Financial Aid & Scholarships website, by calling 303-315-1850, or by viewing scholarship information on the Business School website.

## **Study Abroad**

Transfer credit from study abroad programs requires prior written approval from the Assistant Dean. Students must meet with a business staff advisor to determine course acceptability prior to the semester in which they intend to study abroad. Information on the various programs is available at the Office of International Affairs.

## **Institute for International Business**

CU Denver's Institute for International Business (IIB) was created in 1988 by the Board of Regents of the University of Colorado to serve as a center for the advanced study and teaching of international business (IB). The US Department of Education

designated the IIB as a Center for International Business Education and Research, a prestigious center of excellence award that it has competitively held since 1993. CU Denver is one of only 15 CIBERs in the United States and the only one in Colorado. Among others, the IIB/CIBER promotes interdisciplinary and multi-campus collaboration at the University of Colorado; hosts monthly International Executive Roundtable lectures on global competitiveness; and sponsors IB development programs, conferences and workshops for faculty and the business community in Colorado, the Rocky Mountain region and the United States. The IIB/CIBER works closely with CU Denver's Business in advancing its international business programs and research, as well as other colleges, schools, and departments at CU to promote various internationalization initiatives. Call 303-315-8884 or visit the IIB website at [www.ucdenver.edu/institutes/international-business](http://www.ucdenver.edu/institutes/international-business) for more information.

## **General Academic Policies**

Academic policies that apply to all students at CU Denver are described in the Office of the Registrar website and in the Academic Policies and University Policies sections of the catalog. The policies outlined on the following pages are relevant for both undergraduate and graduate students in the Business School. Individual policies appropriate only to undergraduate or graduate students are described under separate headings. Each student is responsible for knowing and complying with the academic policies and regulations established for the school. The school cannot assume responsibility for problems resulting from a student's failure to follow the policies stated in this catalog. Similarly, students are responsible for all deadlines, rules and regulations stated on the student portal.

## **Academic Ethics**

Students are expected to conduct themselves in accordance with the highest standards of honesty and integrity. Cheating, plagiarism, illegitimate possession and disposition of examinations, alteration, forgery, falsification of official records and similar acts or any attempt to engage in such acts are grounds for suspension or expulsion from the university. In particular, students are advised that plagiarism consists of any act involving the offering of the work of someone else as the student's own. It is recommended that students consult with the instructors as to the proper preparation of reports, papers, etc., to avoid this and similar offenses. Also, actions that disrupt the administrative process, such as misrepresentation of credentials or academic status, other forms of deception or verbal abuse of university staff are grounds for suspension or probation. All discovered acts of dishonesty must be referred to the Business School's Internal Affairs Committee.

## **Admission to Business Courses**

Enrollment in business courses is limited to students who have been admitted to business degree programs and to other students as described in the separate

undergraduate and graduate policy sections. The course registration criteria are designed to meet a number of objectives:

- to assure access to business courses for students admitted into a business degree program
- to serve students in other colleges who have business-related education objectives or requirements
- to serve nondegree students who have specific career or education goals

Refer to the student portal each term for course availability and prerequisites.

## **Attendance Regulations**

Students are required to attend classes, including online classes, on a regular basis. Absences must be arranged with the instructor and must conform with university and instructor policies on attendance. When possible alert your instructor prior to the absence.

## **Prerequisites**

Students are expected to know and fulfill all prerequisites when registering. Prerequisites are in place for the benefit of the student. The Business School wants our students to have the best experience in their courses, and having the prerequisites for a course ensures that you are ready for the material that will be covered. See course listings in the schedule planner for relevant prerequisites as many are strictly enforced. The Business School reserves the right to administratively drop students who enroll without the correct prerequisites. This action may result in the loss of tuition.

## **Course Numbering**

The course numbering system used at CU Denver identifies the class standing required for enrollment. Students are expected to take 1000-level courses in their freshman year, 2000-level courses in their sophomore year, 3000-level courses in their junior year and 4000-level courses in their senior year. Courses at the 5000 and 6000 level are restricted to master's-level business students, and courses at the 7000 level are restricted to PhD students.

## **Adding Courses**

Students may add courses to their original schedule through the census date (first 12 days of the fall or spring semester, first eight days of summer session), Instructor and Dean's signature is required to add a business course after census date.

## **Dropping Courses**

Students may drop a course through the census date and it will not appear on the transcript. After census, and through the 10th week of a regular semester a student who wishes to drop a course may do so through the student portal without instructor or dean signatures. The course and a grade of *W* will appear on the transcript. Beginning the 11th week of a regular semester, a student who wishes to drop must obtain written approval from both the instructor and assistant dean or designate. The course and a grade of *W* will appear on the transcript. In order to drop after the 10th week, it will also be necessary to document circumstances beyond a student's control and complete the appropriate late withdrawal petition form. Any student who is failing a class will not be allowed to drop simply because of their grade. See the academic calendar for deadlines and costs involved and for drop information for other terms. Contact the advising offices for the forms needed to drop after the 10th week of the regular semester terms.

## **Withdrawal**

See the Office of the Registrar chapter of the catalog and website for university-wide withdrawal policies. Note that after the 10th week of the regular semesters, the Business School normally requires instructors' signatures on withdrawal forms before the assistant dean's approval is granted. If a Business student is dropping all courses in a particular semester, the student must complete a petition to withdraw form and submit to the assistant dean or designate for signatures. It will also be necessary to document circumstances beyond a student's control with the petition.

## **Administrative Drop**

The school reserves the right to administratively drop students who are incorrectly enrolled in business courses. While we do our best to administratively drop students prior to the census date to avoid tuition charges, time may not always allow for that timeline and tuition charges may apply.

Note that students who never attend class are not automatically dropped from the course. The student is responsible for dropping courses and failure to do so will result in a tuition charge for the class and an "F" grade.

## **Appeal Procedure**

Students may contact an advisor in the Business School's programs office (303-315-8110) for appeal and petition procedures pertaining to rules and regulations of the school.

## **Grade Appeal Procedure**

Students must follow the process below.

- If the issue is not resolved after a conversation with the faculty member, discuss concerns with the Discipline Director.

- If the issue is not resolved after a conversation with the Discipline Director, discuss concerns with the Associate Dean of Programs.

Neither the Dean, nor any director, will offer an opinion with respect to the qualitative assessment of a student's work, but, may consider whether the procedures used to determine a grade were consistent with the syllabus and written amendments to the syllabus. No passing grade will be changed after one year. Requests for grade adjustments/appeals must be made in the semester immediately following the semester in which the disputed grade was earned. Students may reach out to the advising office to determine the names and contact information of the appropriate Discipline Directors and/or Associate Dean by emailing [undergrad.advising@ucdenver.edu](mailto:undergrad.advising@ucdenver.edu) or [grad.advising@ucdenver.edu](mailto:grad.advising@ucdenver.edu) or by calling 303.315.8110.

## General Grading Policies

*For undergraduate students pursuing a BSBA, a 2.0 cumulative GPA in both campus and Business courses must be achieved to graduate. If the required cumulative GPAs are not maintained, the student will be placed on academic probation. While on probation, the student will need to follow the guidelines outlined by campus and the Business School in order to continue their education. Contact an advisor for details. The Business School cannot confer the degree if the required GPAs are not met.*

*For graduate students pursuing an MBA or an MS, a minimum cumulative graduate business GPA of 3.0 or higher must be achieved and maintained for courses taken toward a graduate business degree. All CU Denver graduate business courses are computed in the graduate business cumulative GPA, regardless if the coursework pertains to the current degree or if the courses were taken as a graduate non-degree seeking business student. Transfer hours and grades from other institutions and/or from University of Colorado courses taken on the Boulder Campus, Colorado Springs Campus, or the Anschutz Medical Campus, are not computed in the business GPA. However, degree credit may be awarded for those transfer courses through a petition process. If the required cumulative GPA does not meet the minimum requirement of 3.0 or higher, the student will be placed on academic probation. While on probation, the student will have 9 credits or 3 semesters to reach the required cumulative GPA of 3.0 or higher. If after that probation period the student is still not at the required 3.0 or higher GPA, the Business School cannot confer the degree.*

*Plus/Minus Grading.* Faculty have the option to use plus/minus grading.

*Incomplete Grades.* The only incomplete grade given in the school is an *I*. An *I* grade is assigned only when documented circumstances clearly beyond the student's control prevent completion of course requirements (exams, papers, etc.). Students must sign a contract outlining how they will make up the missing work with the instructor giving the *I*. If and *I* is assigned, students do not register for the course a second time. Instead, they work with the faculty member to make up the remaining requirements. All *I* grades must be made up within the contract period (which may not exceed one year), or the *I* will automatically be changed to the grade of *F*.

The student is responsible for contacting the instructor to schedule the completion of the coursework.

*Grade Changes.* Grades as reported by instructors are final. Grade changes will be considered only in cases of documented clerical errors, approved grade appeals, or

when a student is making up an incomplete grade (*I*). All changes must be made within one year after the course has been taken, unless highly unusual circumstances can be documented and the change has been approved by the school.

*Pass-Fail or No Credit (Audit)*. With the exception of internships, experiential learning and travel study courses, the Business School does not permit the election of pass-fail grading for any business course required for the student's degree. Students are not allowed to audit business courses.

## Academic Programs

A carefully designed curriculum to prepare students for success in business administration is available for the student seeking either an undergraduate or graduate degree. The school offers courses leading to the bachelor of science in business administration (BSBA), master of business administration (MBA), the master of science (MS) and doctor of philosophy (PhD) degrees.

As an undergraduate student, it is possible to pursue two major simultaneously or consider a major and a minor.

It is possible to pursue two graduate degrees simultaneously, such as an MBA and an MS, or two MS degrees, through our dual degree programs. In addition to the programs in the Business School itself, we partner with other university departments to offer dual programs in MS finance and risk management/economics and the MBA in combination with graduate programs in architecture, bioengineering, economics, political science, urban planning and the MD.

## Graduate Business Programs (MBA/MS/PhD)

**Associate Dean:** Ronald Ramirez

**Assistant Dean:** Linda Brooker

**Telephone:** 303-315-8110

**Fax:** 303-315-8199

**E-mail:** bschool.admissions@ucdenver.edu

The Business School offers programs leading to a doctor of philosophy, the master of business administration and the master of science in specific fields of business and health administration. In addition, the master of business administration for executives (executive MBA) is offered as a multi campus program of the University of Colorado business schools, and the executive program in health administration (executive MBA/HA) is offered through the executive health network.

The PhD, MBA, executive MBA, MS and BS degrees in business are accredited by AACSB International, the Association to Advance Collegiate Schools of Business. The health administration MBA and MS degrees are also accredited by the Commission on Accreditation of Healthcare Management Education (CAHME). In addition, the accounting programs have earned a separate AACSB International accreditation.



For a list of graduate business programs, see Program Curricula below.

## **Requirements for Admission to the MBA and MS Programs**

### **Admissions/Advising**

Persons contemplating graduate study are encouraged to learn about admission and program requirements by scheduling an appointment with our recruiting staff or attending one of the regularly scheduled prospective student information meetings. Call 303-315-8110 to schedule an appointment.

Admission to the graduate programs in business is granted only to students showing high promise of success in graduate business study. Admission is based on the following indicators of the candidate's likelihood to succeed in the program.

### **Academic Record**

The bachelor's degree must be earned from a regionally accredited university. The total academic record is considered, including the GPA, the course of study, and the quality of the program.

### **Required Testing**

The GMAT or GRE is required for admission consideration for any applicant who does not have a previously awarded master's degree. GMAT waivers are available on a case-by-case basis and can be requested while completing the online application. The GMAT or GRE is administered at numerous centers throughout the world. For information and to register for the test, write to: GMAT/GRE, Educational Testing Service, CN 6103, Princeton, NJ 08541; or phone 1-800-GMATNOW; or visit [www.mba.com](http://www.mba.com). The code numbers for CU Denver's graduate business programs are as follows:

MBA: MPB-OG-78  
One Year MBA: MPB-OG-65  
MS: MPB-OG-75  
PhD: MPB-OG-29

GMAT is preferred for *all* the graduate business programs. Students may submit a GRE score for any of the graduate degree programs, but the decision to accept the GRE is on a case by case basis. If you have not taken either the GMAT or the GRE, we strongly recommend the GMAT. GMAT waivers are available on a case-by-case basis and can be requested while completing the online application. GMAT waivers are primarily considered based on a previous graduate degree and/or considerable work experience. Other graduate admission exams such as the MCAT and LSAT may also be considered, but, some programs will not accept either. See individual program information for specifics. The MS in business analytics program does not accept the

LSAT or MCAT in place of the GMAT or GRE without extensive verifiable evidence of the student's prior mathematical preparation and coursework. For more detailed information on admissions requirements, phone the graduate programs office 303-315-8211 or email them at: [bschool.admissions@ucdenver.edu](mailto:bschool.admissions@ucdenver.edu).

### **Work Experience**

While we do not require work experience, a record of appropriate employment at increasing levels of responsibility is considered a positive indicator of the likelihood of successful completion of graduate work. A resume must be submitted with the application materials.

### **Background Requirements**

Students applying for graduate programs in business *do not need an undergraduate degree in business*. The MBA program is specifically designed so that the required courses cover the material needed for completion of the degree. There are no prerequisites needed to start the MBA program. Students with non-business backgrounds have completed the program successfully. However, applicants for some of the MS degrees may be required to take background or common body of knowledge business courses, depending on the individual's academic background. For more detailed information on which background courses may be needed refer to the individual program information in this catalog or on our website, or phone the graduate programs office to schedule an appointment with a graduate academic advisor, 303-315-8110 or email the advisors at: [grad.advising@ucdenver.edu](mailto:grad.advising@ucdenver.edu).

It is expected that students have an adequate level of personal computer proficiency in a word processing and spreadsheet software, as well as a good working knowledge of basic algebra and English grammar.

### **Letters of Recommendation**

Some programs require letters of recommendation while others do not. Please see individual graduate program details for specifics.

### **The Admission Process**

Mailing address for applications:

Graduate Admissions  
The Business School  
University of Colorado Denver  
Campus Box 165, P.O. Box 173364  
Denver, CO 80217-3364

Students seeking admission to the One Year MBA, MBA with an emphasis in health administration, MS in health administration or executive programs should consult with the relevant catalog sections for additional application criteria or requirements.

### **Domestic Application Requirements**

- Complete parts I and II of the application for graduate admission and the four essay questions.
- Have required GMAT or GRE scores sent directly to the graduate business admissions office from the Educational Testing Service. The code for CU Denver's graduate business programs are as follows:

MBA: MPB-OG-78  
One Year MBA: MPB-OG-65  
MS: MPB-OG-75  
PhD: MPB-OG-29

- Have two official transcripts (not student copies) mailed directly from each school, college, and university ever attended past high school. Transcripts must be sent even if credit course work completed was not part of a degree program or was taken after an undergraduate degree was earned.
- Resumé
- Enclose a check for \$50 for the MBA, MS or PhD programs, or \$50 for the dual MBA/MS or dual MS/MS, made payable to the University of Colorado at Denver. Personal interviews are not required, except for the One Year MBA and the MBA and MS in health administration. You will be contacted to schedule the interview.

*Deadlines.* To be considered for admission, applicants for graduate programs must submit all materials prior to the following dates:

*Fall-* Domestic applications April 15

International applications March 15

*Spring-* Domestic applications October 15

International applications September 15

*Summer-* Domestic applications February 15

International applications January 15

The One Year MBA option only admits students each fall. The application deadline for the One Year MBA is June 15.

Early applications are encouraged because, if admitted, the student receives priority for registration time assignment. Applications received after published deadlines with complete supporting documentation, scores, fees and transcripts will be considered; however, those students may not meet scholarship deadlines and in some cases, course availability is limited for the later applicants.

### **International Application Requirements**

See International Students.

## **Academic Policies for Graduate Students**

### **Advising**

As soon as possible, after being admitted, students should schedule an appointment with a graduate advisor to discuss general degree requirements and determine if any background course work may be required and/or what common body of knowledge business courses or prerequisites might be waived for the MS degrees. Call 303-315-8110 to schedule an appointment or email them at [grad.advising@ucdenver.edu](mailto:grad.advising@ucdenver.edu).

## **Degree Plan**

All students are encouraged to meet with a graduate advisor during their first semester to review their degree plan. Students are also encouraged to meet with a graduate advisor throughout their program to ensure the correct sequencing of courses. In order to ensure that registration runs smoothly, an advising hold will be placed on newly admitted students in our MS in accounting and our MS in international business programs. Those students must schedule a time to meet with an advisor prior to registration in their first semester. Call 303.315.8110 to schedule an appointment.

## **Course Load**

The normal course load for full-time graduate students is 9-12 semester hours. However, because many students are also pursuing a career, it is possible to attend classes on a part-time basis by enrolling in 3-6 semester hours. For financial aid purposes, 5 semester hours of graduate study is considered full time during the fall and spring terms and 3 semester hours for the summer term. Graduate courses are scheduled primarily in the evening or online to accommodate work schedules. Students wishing to take more than 12 credits in one semester must get approval from the assistant dean. Contact [grad.advising@ucdenver.edu](mailto:grad.advising@ucdenver.edu) for details.

## **Transfer of Credit**

Upon approval of the program specific director, a maximum of 12 semester hours of graduate business course work may be transferred to the MBA and 9 semester hours for the MS degrees (9 semester hours for each the MBA and MS degree for a dual MBA/MS degree program). Note: for the MS in business analytics only 6 semester hours may be transferred into the program. Courses must have been taken from another AACSB accredited graduate school of business or one of the top 200 universities in the country and courses must have been completed within the last five years with a grade of at least B (not B-). No transfer courses will be accepted if they have been used to satisfy degree requirements of a previously awarded degree. Graduate business courses taken at other University of Colorado Business Schools are considered transfer hours and are included in the transfer limit. Transfer of quarter hours of graduate business credit may satisfy a course requirement, but may not satisfy the total number of hours required. One-quarter hour equals .667 semester hour.

## **Transfer to Another Business School Program**

Because admission standards *vary* between degree programs, students who wish to transfer from one CU Denver Business School degree program to a different Business School degree program must meet the admissions standards for the program they wish to apply. There are no automatic transfers between programs and admission into one program does not guarantee admission into another program. Also, graduation from one program does not guarantee admission into another program because the admissions standards vary between programs.

## **Time Limits**

Master's students are required to complete all degree requirements within five years and one semester (seven years and one semester to earn dual MBA/MS or MS/MS degrees, or a PhD). Courses completed outside of these time limits will not be accepted toward the degree without an approved petition. Time-limit extensions are given only for external situations that restrict a student's ability to complete the program in a timely manner. If you do not take graduate business courses for more than three consecutive semesters, you will need to reapply for admission and meet the admission standards in place for the new application term. At the time of re-admission, your time limit will also be evaluated to determine which courses may meet the time limits listed above.

## **Former Students**

Any Denver campus graduate student who has not been enrolled in his or her admitted program of study for three consecutive semesters (summers included) is considered a former student and must reapply for admission to the program by submitting part I of the application for graduate admission, in-state tuition classification form, along with the applicable fee. Readmitted students must conform to degree requirements in effect during the term in which they are readmitted. If the new requirements differ significantly from the former degree plan, a petition may be submitted requesting exceptions.

## **Graduation**

Students must complete the online intent to graduate form on the Registrar's website ([www.ucdenver.edu/registrar](http://www.ucdenver.edu/registrar)) when they register for their last semester. Contact the graduate advising office with questions at [grad.advising@ucdenver.edu](mailto:grad.advising@ucdenver.edu).

## **Grade Point Average Requirements**

A minimum cumulative graduate business GPA of 3.0 must be achieved and maintained for courses taken toward a graduate business degree. All CU Denver graduate business courses, regardless if the coursework pertains to the current degree and including courses taken as a graduate non-degree seeking business student, are computed in the graduate business cumulative GPA. Transfer hours and grades from other institutions and/or from University of Colorado courses taken on the Boulder Campus, Colorado Springs Campus, or the Anschutz Medical Campus, are not computed in the business GPA. However, degree credit may be awarded for those transfer courses through a

petition process. If the required cumulative GPA does not meet the minimum requirement of 3.0 or higher when degree course requirements have been met, the student will be placed on academic probation. Academic probation will only be offered at that time if the student can mathematically achieve the required 3.0 cumulative GPA by taking the additional 9 semester credits of coursework. While on probation, the student will have 9 credits or 3 semesters to reach the required cumulative GPA of 3.0. If after that probation period, the student is still not at the required 3.0 GPA to graduate, the Business School cannot confer the degree.

## **Probation and Suspension**

If after completing 9 semester hours a student's cumulative graduate business GPA falls below 3.0, the student will be placed on academic probation and given three semesters (one calendar year) or 9 semester hours of graduate business course work (whichever occurs first) in which to achieve the required 3.0 cumulative average. If the student achieves that required cumulative GPA, they are cleared from probation and may continue their studies with us. Failure to achieve the required GPA within the allotted time period may result in suspension for one year. Suspended students may not attend any campus of the University of Colorado including continuing education/extended studies. Students on suspension may petition for readmission to the school after waiting a minimum of one year from the term in which they were suspended. Any suspended student readmitted to the school will be placed on continued probation status to monitor required progress. To be considered for readmission, a petition form plus a new graduate application part I and in-state tuition classification form must be submitted along with the appropriate fee. Generally, petitions are granted only on rare occasions. Re-admitted students must meet any new admission requirements that may be in place. In addition, if a student cannot mathematically achieve the required 3.0 cumulative GPA with the remaining required courses, the petition to return will not be approved.

### **Passing Grades**

Any grade below a C (2.0) is a failing grade for graduate students (C is passing; C-, D+, D, D- and F are failing). Graduate students must repeat a required course for which they have received a grade below a C. Both the original grade and the grade for the repeated course count in the computation of the business GPA. If a grade lower than a C is earned in an elective course, the student may repeat that course or select another course. NOTE: C is a passing grade, while C-, D+, D, D- and F are failing grades.

### **Repeating Graduate Business Courses**

A failed course (any grade below a C such as C-, D+, D, D- or F) must be repeated if it is a required course. Both the original and the repeated grade will remain on the student's transcript and both grades will be calculated into the student's cumulative GPA. A course in which a grade of C or better is obtained may not be repeated. Graduate business courses repeated without approval may not be used in the graduate business GPA calculation.

### **Drop/Withdrawal**

Classes dropped prior to census date will not appear on the transcript. Thereafter, to drop after census date, with a grade of *W*, a student must be earning a grade of *C* or better; otherwise, an *F* will appear on the transcript. Students will not be permitted to drop a course or withdraw from all courses after the 10th week of the semester, unless circumstances outside the student's control are documented. The late request to drop or withdraw must be approved by the assistant dean and the course instructor(s). If a student requests to drop a course after the 10th week solely due to a failing grade, the request will be denied. Requests to drop after the 10th week must include a petition explaining the reason for the late drop.

## **Registration for Graduate Business Courses**

Students admitted to graduate business degree programs have priority for graduate business course registration. Nondegree students and graduate students from other University of Colorado schools or colleges may be permitted to attend on a space-available basis by meeting the qualifications and submitting a nondegree application form. (See the college website for the form.) Some graduate-level (6000-level) courses may be offered simultaneously with undergraduate 4000-level courses. However, most 6000-level courses are reserved exclusively for graduate business students.

## **Master of Business Administration Programs**

The master of business administration (MBA) program provides a general background in management and administration. This background enables the student to have the breadth of exposure and depth of knowledge required for an advanced-level management career. The program is devoted to developing the concepts, analytical tools and communication skills required for competent and responsible administration of an enterprise viewed in its entirety, within its social, political and economic environment.

The professional MBA program allows the scheduling of classes with maximum flexibility so students can progress through the program at their own pace, by taking as little as one class per semester or as many as five classes per semester, at times that are convenient to their work schedule. The program can be completed in as little as 16 months or as long as five years plus one semester.

Online courses add additional flexibility. Students may complete all degree requirements online, or combine online and campus courses to broaden the choice of electives or to fit a business travel schedule or personal learning style. All the core courses are offered online in the fall and spring terms, with limited online offerings in the summer semester. Your choice of online electives and specializations is limited.

The MBA program is also available in different configurations: One Year (full time, see relevant section), fully online, health administration and the executive MBA (see relevant section). All MBAs have the same curriculum requirements; they differ only in their focus, the choice of electives, the flexibility of course scheduling and the time required to complete the program. The One Year and executive MBAs are lockstep

programs, where all the students complete all program requirements together. No course transfers, waivers or substitutions are permitted in the lockstep programs.

For a list of MBA programs, see Program Curricula below.

## **Master of Science Programs**

Master of science degrees (MS) are offered in the fields of accounting, business analytics, finance and risk management, global energy management, health administration, information systems, international business, management, marketing, and taxation.

The MS degree affords the opportunity for specialization and depth of training within a particular field. The specialization and expertise developed within the MS program prepares the student for more specialized staff positions in industry, the nonprofit sector and government.

The course requirements for the MS degree in each of the fields are divided into different components-common body of knowledge (CBK), graduate core, and elective requirements. The CBK requires business courses to develop general breadth and competence in the fields of business administration. These requirements differ among MS degree programs and some MS degree programs have eliminated CBK requirements. Some CBK requirements may be waived if evidence of equivalent undergraduate or graduate-level coursework is shown and if the course work has been completed within the past 10 years. An undergraduate degree in business administration earned from an AACSB or regionally accredited university will meet most of the CBK requirements. The graduate core and elective courses require at least 30 semester hours of graduate-level coursework. BUSN courses lower than 6800 may not be used as free electives in the majority of our MS programs. Contact a graduate staff advisor for any exceptions at [grad.advising@ucdenver.edu](mailto:grad.advising@ucdenver.edu).

No comprehensive exams are required.

For a list of graduate MS programs, see Program Curricula below.

## **Dual Degree Programs**

Dual degree program options within the Business School include:

- MBA/MS
- MS/MS
- MBA/MD
- MBA/MS in Bioengineering
- MBA/MURP (Urban and Regional Planning)
- MBA/Political Science



Please be aware that admission into one of our programs does not guarantee admission into another program. If adding a dual, you must meet the admission requirements for both programs. All programs have their own unique admissions requirements. Graduation from one program does not guarantee admission into another program.

## PhD CSIS Program

**Program co-director:** Jiban Khuntia (Ph: 303-315-8424, email: jiban.khuntia@ucdenver.edu)

The computer science and engineering (CSE) department in the College of Engineering and Applied Science and the Business School offer a joint doctor of philosophy degree program in computer science and information systems (CSIS). Known as **the CSIS Ph.D., this program provides two tracks:**

- The Computer Science (CSIS CS Track) in the College of Engineering and Applied Science.
- The Information Systems (CSIS Business Ph.D.) in the Business School.

The CSIS Business Ph.D. program is located Business School of the University of Colorado Denver. Students admitted to CSIS Business Ph.D. will work with the Information Systems Department of the Business School at the University of Colorado Denver. The primary mission of the CSIS Business Ph.D. program is to produce individuals who will contribute to the discovery and dissemination of scientific knowledge through continued careers in research, publishing, and teach at research-oriented universities and research-oriented non-academic institutions throughout the world.

A prospective student requiring admission to this program, needs to choose the CSIS Business Ph.D. track and complete the application process. The admission to the program is competitive and is decided based on the following criteria.

1. Undergraduate GPA (should be above 3.4)
2. Standardized GMAT or GRE scores (test must have been taken within the last five years of intended term of enrollment. No score minimum)
3. TOEFL scores (for international applicants only who have not graduated from a U.S.A. institution. Test must have been taken within two years of the intended term of enrollment)
4. A statement of purpose essay describing an applicant's motivation and an initial plan for doctoral study
5. Curriculum Vitae, that includes work experience with dates of employment, reflecting prior achievements in academic and industry
6. Three letters of recommendation

Documents reflecting the above criteria, along with relevant fees, need to be uploaded through the online application process

at <http://www.ucdenver.edu/academics/colleges/business/apply-now/Pages/PhD-Admissions.aspx>

### **Application Deadlines:**

- For Fall admissions, the applications need to be completed by January 31st (5:00 p.m. MST).
- For Spring admissions, the applications need to be completed by September 31<sup>st</sup> (5:00 p.m. MST)

**Financial Aid:** The financial aid is decided after acceptance into the program. Doctoral students in the CSIS Business Ph.D. receive financial assistance through either research or teaching assistantships. These assistantships are decided based on merit, academic performance, and funding availability.

**Program Requirements:** Business School IS Ph.D. students should complete at least 60 credit units of coursework. This includes 30 units of Ph.D. level Information Systems (IS) theory-based, and research methods courses; and 30 dissertation topic units. Students are not holding a master's degree in IS, and demonstrating insufficient skills, may need to take additional coursework prior to the start of their Ph.D. program.

Each student will develop a detailed program plan with the consultation of advisor(s) to outline two years of required course works, take the prelims and comprehensive exams, fulfill their teaching requirement, and complete their dissertation. Students generally complete the IS theory-based and methods coursework within the first two years of their program. After completing all required coursework, students immediately take a comprehensive exam, typically during the Maymester time-period if finishing coursework in the Spring. Besides these general requirements, students should work with faculty on various research assignments that ultimately may be published in top-ranked IS journals.

Following successful completion of the comprehensive exam, students begin to work on their dissertation research during the Summer before the start of their 3rd year. The dissertation is an independent research project conducted by the student under the supervision of a dissertation committee assembled by the student. It is strongly recommended that students do research consistent with the research interests of current faculty. These topics include Behavioral, Organizational, Economics and Social issues related to information systems. The specific sequence of courses can vary depending on the schedule of classes being offered. The following is a sample milestone for the program schedule and completion requirements.

## **Executive Programs**

### **Executive MBA**

### **Faculty and Resources**

The faculty are senior faculty of the Business Schools from three of the university's campuses. The executive MBA program is offered jointly by the Graduate Schools of Business Administration in Boulder, Colorado Springs and the Business School in Denver. Faculty are nationally recognized, and all possess both practical managerial experience and a demonstrated ability to work effectively with executive-level students.

## **Admission Requirements**

The executive MBA program is designed for men and women who have eight to 10 years experience in a decision-making position. In the selection process, significant attention will be given to the depth and breadth of the candidate's experience, progression in job responsibility, total work experience and the ability to benefit from this integrative classroom/work environment. The admissions committee will base its decision on the application, former academic record, relevant test scores, the employer's nominating letter, other letters of recommendation and a personal interview.

**For application and additional information, write to:**

Executive MBA Program  
University of Colorado Denver  
P.O. Box 480006  
Denver, CO 80248-0006  
303-623-1888

## **Executive MBA in Health Administration**

**Program Manager:** Roger Japp  
**Telephone:** 303-315-8015 or 1-800-228-5778

## **Program Sponsors**

The executive program in health administration is a cooperative program of CU Denver and the Network for Healthcare Management.

The University of Colorado Denver serves as the degree-granting institution for the executive program. The graduate program in health administration is located in the Business School.

The Network for Healthcare Management is an educational consortium representing healthcare executives and academic faculty from major health administration graduate programs in the United States and Canada, including Arizona State University, Northwestern University, Ohio State University, San Diego State University, the University of California at Berkeley, the University of California at Los Angeles, the University of Colorado Denver, the University of Michigan, the University of Missouri, the University of North Carolina, the University of Southern California, the University of Toronto, the University of Washington and Virginia Commonwealth University.

## **Extend your education**

Whether you are looking to advance in your current field or prepare for an entirely new career, the Business School offers opportunities to meet your goals.

A variety of classes and programs are available to community members and alumni. Classes are taught by expert faculty or influential members of the Denver business community, imparting knowledge that is readily applicable in the field.

### **Entrepreneurship**

The Jake Jabs Center for Entrepreneurship offers programs for those looking to start a new venture or enhance their entrepreneurial skills. See the college website for more information.

### **Certificate Specialization Programs**

Modern career paths are flexible, so it's beneficial to have a flexible degree. If you already have a graduate business degree from an AACSB accredited school, the CU Denver Business School allows you to add specialized knowledge through our post-graduate certificates. See the college website for more information.

## **Course List for the Business School**

[Click here](#) for a list of courses offered by the Business School.

## **Program Curricula**

### **Programs**

#### **Certificate**

- Bioinnovation and Entrepreneurship Certificate
- Commodities Certificate
- Entrepreneurship Certificate
- Post-Graduate Certificates
- Risk Management and Insurance Certificate
- Sustainability Certificate

#### **Doctor of Philosophy**

- Computer Science and Information Systems PhD (Business School)

#### **Master of Business Administration**

- Business Administration – Health Administration MBA
- Business Administration MBA
- Business Administration: One Year MBA
- Executive MBA in Health Administration
- Master in Business Administration for Executives, MBA

#### **Master of Business Administration/Master of Science**

- Business Administration/Business MBA/MS
- MBA/MS in Bioengineering

#### **Master of Business Administration/Doctor of Medicine**

- Business Administration/Medicine MBA/MD

#### **Master of Business Administration/Master of Urban and Regional Planning**

- Business Administration/Urban and Regional Planning MBA/MURP

#### **Master of Science**

- Accounting MS
- Business Analytics MS
- Finance and Risk Management MS
- Global Energy Management MS
- Health Administration MS
- Information Systems MS
- International Business MS
- Management and Organization MS
- Marketing MS
- Taxation MS

#### **Master of Science/Master of Arts**

- Finance/Economics MS/MA

#### **Master of Science/Master of Science**

- Business/Business MS/MS

# SCHOOL OF EDUCATION & HUMAN DEVELOPMENT

## **Dean**

Rebecca Kantor, Professor and Dean

## **Associate Deans**

Dorothy Garrison-Wade, Faculty Affairs

Barbara Seidl, Teacher Education and Undergraduate Experiences

Scott Bauer, Advanced Education and Doctoral Programs

## **Assistant Deans**

Patricia Ball, Finance and HR

Brad Hinson, Information & Academic Technology

Sandy Mondragon, Student Success and Enrollment Management

## **Contact**

### **Admissions**

Office of Admissions & Outreach

1380 Lawrence Street Center, Suite 701

**Phone:** 303-315-6300 voice; 303-315-6311 fax

**Email:** [education@ucdenver.edu](mailto:education@ucdenver.edu)

**Website:** <https://education.ucdenver.edu/>

### **Mailing Address**

School of Education & Human Development

P.O. Box 173364, Campus Box 106

Denver, CO 80217-3364

## **Overview**

The School of Education & Human Development is a vibrant community of practicing educators and counselors, educational leaders and researchers who have a strong service ethic locally, nationally and globally and a dedication to excellence.

## **Mission**

### **Leadership for Educational Equity**

Prepare and inspire education and mental health leaders to have a profound impact in fostering student opportunity, achievement and success in urban and diverse communities.

### **Vision**

A leading school of education providing national expertise on educational issues and socially-just solutions for urban and diverse communities. Through innovative research and partnerships, we strive to be passionate agents of change, inspiring upcoming generations to learn from the past and shape the future.

### **Our Role in the Community**

We are committed to developing forward-thinking educators and counselors who have a deep sense of inquiry, a concern for pressing social problems, a great desire to live their lives purposefully, a passion for giving back to the community and the cultural competence needed to serve urban and diverse populations.

### **Diversity and Inclusion**

At the School of Education & Human Development (SEHD), we believe strongly that all students-diverse in race, ethnicity, economic resources, language, fluency, abilities, geography, first-generation status, age, gender, and sexual identities-deserve the opportunity to learn. To advance our mission and meet the changing interests of our local and global communities, the Office of Diversity and Inclusion has been established to create positive momentum towards educational access, equity, and success.

### **Accreditations**

The School of Education & Human Development is fully accredited by the Colorado Department of Education (CDE).

The School of Education & Human Development is fully accredited by the Council for Accreditation of Counseling and Related Education Programs (CACREP) in Clinical Mental Health Counseling, School Counseling and Marriage and Family Therapy/Counseling.

The School of Education & Human Development is accredited on contingency by the American Psychological Association (APA) in School Psychology. We anticipate receiving full accreditation on or prior to the expiration date of April 15, 2023.

## **Programs Leading to Degrees, Licenses and Endorsements**

The School of Education & Human Development offers three doctoral programs, one educational specialist degree, master's degrees in seven program areas as well as undergraduate degrees with teacher licensure through a partnership with the College of Liberal Arts and Sciences. We offer a variety of endorsements and certificate programs as well. Students may pursue a variety of state licenses for teaching and school administration or may elect to earn these licenses without pursuing a graduate degree.

## **Graduate Programs**

### **Leadership for Educational Organizations**

Go to information for this department.

## Programs

### Education Specialist

- Leadership for Educational Organizations EdS with Principal Licensure

### License

- Administrator License - Executive Leadership Program
- Principal Licensure

### Master of Arts

- Leadership for Educational Organizations (non-licensure): Early Childhood Education Concentration
- Leadership for Educational Organizations MA Principal Licensure

## Counseling

Go to information for this department.

## Programs

### Master of Arts

- Counseling MA

## Curriculum and Instruction

Go to information for this department.

## Programs

### Master of Arts

- Critical Pedagogy MA

## Doctoral Studies in Education

Go to information for this department.

## Programs

### Doctor of Education



- Leadership for Educational Equity EdD

### **Doctor of Philosophy**

- Education and Human Development PhD

## **Early Childhood Education**

Go to information for this department.

### **Programs**

#### **Endorsement**

- Early Childhood Special Education Specialist Endorsement

#### **License**

- Early Childhood Special Education Specialist Licensure

#### **Master of Arts**

- Early Childhood Education MA

## **Learning, Developmental and Family Sciences**

Go to information for this department.

### **Programs**

#### **Master of Arts**

- Learning, Developmental and Family Sciences MA

## **Learning Design and Technology**

Go to information for this department.

### **Programs**

#### **Endorsement**

- Learning Design and Technology: Instructional Technology Specialist Endorsement
- Teacher Librarian Endorsement

## **Master of Arts**

- Learning Design and Technology: eLearning Design and Implementation MA
- Learning Design and Technology: Digital Media for Teaching and Learning (K-12) MA
- Learning Design and Technology: Instructional Design and Adult Learning MA
- Learning Design and Technology: Teacher Library MA

## **School Psychology**

Go to information for this department.

### **Programs**

#### **Doctor of Psychology**

- School Psychology PsyD

## **Responsive Literacy Education**

Go to information for this department.

### **Programs**

#### **Certificate**

- Early Literacy Certificate
- Literacy and Language Development for Diverse Learners Certificate

#### **Endorsement**

- Reading Teacher K-12 Endorsement

#### **Master of Arts**

- Literacy Education MA
- Literacy Education MA in English Education
- Literacy Education MA with Reading Teacher K-12 Endorsement

## **Culturally and Linguistically Diverse Education**

Go to information for this department.

## **Programs**

### **Certificate**

- Teaching for Cultural and Linguistic Diversity (TCLD) Certificate

### **Endorsement**

- Colorado Endorsement for Culturally and Linguistically Diverse Education
- Culturally and Linguistically Diverse Bilingual Specialist Endorsement
- Culturally and Linguistically Diverse Education Endorsement: K-12

### **Master of Arts**

- Master of Arts in Culturally and Linguistically Diverse Education
- Master of Arts in Culturally and Linguistically Diverse Education with K-12 Endorsement

## **STEM Education**

Go to information for this department.

## **Programs**

### **Certificate**

- Graduate Certificate in Mathematical Content Knowledge for Teaching

### **Endorsement**

- Middle School Math Endorsement

### **Master of Arts**

- STEM Education MA with a concentration in Math and Science Education
- STEM Education MA with a concentration in Mathematics Education: On Campus

- STEM Education MA with a concentration in Mathematics Education: Online
- STEM Education MA with a concentration in Science Education

### **Master of Science**

- Master of Science in Education in Mathematics Education MSED

## **Special Education**

Go to information for this department.

### **Programs**

#### **Endorsement**

- Special Education Generalist Endorsement Only

#### **Master of Arts**

- MA in Special Education
- MA in Special Education with Special Education Generalist (Ages 5-21) Endorsement

## **Research and Evaluation Methods**

Go to information for this department.

### **Programs**

#### **Master of Arts**

- Research and Evaluation Methods MA
- Research and Evaluation Methods MA with a concentration in Assessment

## **Master of Arts in Teaching**

Go to information for this department.

### **Programs**

#### **Master of Arts**

- Master of Arts in Teaching

# LEADERSHIP FOR EDUCATIONAL ORGANIZATIONS

**Office:** Lawrence Street Center, 701

**Telephone:** 303-315-6300

**Email:** [academicservices@ucdenver.edu](mailto:academicservices@ucdenver.edu)

**Website:** <https://education.ucdenver.edu/academics/graduate/leadership-for-educational-organizations>

The Leadership for Educational Organizations (LEO) program is designed to develop outstanding educational leaders. Students will develop in-depth understanding about leadership roles and responsibilities, contemporary educational issues and collaboration, as well as a thorough awareness of legal, financial and political dimensions impacting education.

The LEO program seeks students who possess:

- High intellectual ability
- Strong sense of equity and social justice
- Strong academic backgrounds, and
- Clear leadership potential.

## Faculty

For information about faculty in this area, visit: <https://education.ucdenver.edu/about-us/faculty-directory>

The primary responsibility of the leadership for educational organizations (LEO) faculty is to prepare future ready leaders to make an impact for public education in Colorado and the nation. Currently, the principal license is required for people seeking building-level administrative positions in Colorado. Alternatively, the administrator license may be required for district-level leadership positions in Colorado.

Click on any of the following to go to that information:

- Principal Licensure
- Leadership for Educational Organizations MA Principal Licensure
- Leadership for Educational Organizations (non-licensure): Early Childhood Education Concentration
- Leadership for Educational Organizations EdS with Principal Licensure
- Administrator License - Executive Leadership Program
- Leadership for Educational Equity EdD with Principal or Administrator License
- Education and Human Development PhD with a concentration in Leadership for Educational Organizations

# CURRICULUM AND INSTRUCTION

Return to: School of Education & Human Development

**Office:** Lawrence Street Center, 701

**Telephone:** 303-315-5001

**E-mail:** [ASPIRE@ucdenver.edu](mailto:ASPIRE@ucdenver.edu)

## **Faculty**

Information about faculty in this program is available online

at <https://education.ucdenver.edu/continuing-education/aspire/team>

The faculty of the Curriculum & Instruction MA works with educators to adopt a pedagogy that is holistic, experiential, relational and liberatory. Students examine the political nature of schooling and the systemic inequities (social, economic, gender, ethnocultural background, racial geography, etc.) that help create unequal education opportunities for a variety of learners. The program aims to introduce participants to an approach to teaching and learning that moves beyond transmission and mastery of content towards teaching/learning that promotes the practice of freedom, liberation, justice and community.

C&I faculty also emphasize the importance of teachers as scholars and reflective practitioners. To help you transition to this graduate student role, the program requires students to leverage the text, *They Say / I Say: The Moves That Matter in Academic Writing*, 3rd edition (authors: Graff and Birkenstein) prior to your first course in the program. The book prepares students for the program's academic writing expectations. Graff and Birkenstein use a metaphor of academic writing as a conversation. Each chapter describes relevant argumentative moves, examples, and templates to assist you in integrating the language, ideas, and arguments of others into your writing. Students will find the text to be a quick read and an invaluable resource throughout the program.

## **Program Options**

- Critical Pedagogy MA

# EARLY CHILDHOOD EDUCATION

**Office:** Lawrence Street Center, 701

**Telephone:** 303-315-6300

**E-mail:** [academicservices@ucdenver.edu](mailto:academicservices@ucdenver.edu)

**Website:** [www.ucdenver.edu/education](http://www.ucdenver.edu/education)

## **Faculty**

More information about faculty in this program is available online at <https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/early-childhood-education>

## Early Childhood Education Program

The Early Childhood Education (ECE) program leads to a master's degree in early childhood education and/or licensure or added endorsement in early childhood special education specialist (ECSE). The program prepares early education leaders who will enrich the life experience of young children (ages birth to 8 years) and their families through a variety of professional roles. In addition, ECE offers its courses in a variety of formats to meet your learning and personal circumstances (i.e. online, face to face and hybrid formats).

ECE Program students may select from three program options:

- Early Childhood Education MA
- Early Childhood Special Education Specialist Endorsement with or without MA
- Early Childhood Special Education Specialist Licensure with or without MA

The ECE program focuses on building and supporting learning and development of all children across inclusive settings in the natural environments where they live, grow and learn. Our program emphasizes family-centered practices, culturally sustaining teaching and is inspired by the potential of all children and families. The program draws on university resources and the clinical expertise of various professionals and early childhood partners in the community. There is a strong emphasis on fieldwork and practicum experiences in both regular and special education concentrations. Field experiences are a part of each course and provide an opportunity for each student to gain knowledge, abilities and dispositions while interacting with children, families, program staff and community agencies. Practicum experiences are designed for students to apply knowledge and practice skills in a closely supervised environment.

The MA in ECE and ECSE focus share course content in:

- language and literacy development,
- child growth and development,
- teaching and learning approaches with young children,
- learning, development and education grounded in culture, context and identity of young children,
- research methods for education,
- early childhood curriculum and program development for culturally and linguistically diverse inclusive classrooms collaborative program development and supports for children with families and communities,
- leadership of programs and early childhood professionals for practice, advocacy and social change

The early childhood special education program provides specialized preparation in:

- screening and assessment of young children

- inclusive intervention strategies with infants, preschoolers and primary aged children
- social emotional competence and classroom support for children with severe and persistent challenging behavior
- collaborative team membership on a transdisciplinary team
- learning and development of children from diverse sociocultural backgrounds and abilities inclusive services for children diagnosed with low incidence disabilities including autism, developmental delay and chronic illness

## **Program Requirements**

Semester Hour Requirements:

MA in ECE: 30 semester hours

ECSE specialist license: 36 semester hours

MA in ECE plus ECSE specialist license: 42 semester hours

MA in ECE plus ECSE specialist added endorsement: 36 semester hours

ECSE specialist added endorsement: 24 semester hours

## **Fieldwork and Practicum Requirements**

For the MA in ECE plus the ECSE specialist initial license, a total of 650 hours of fieldwork/practica is required. Approximately 200 hours of fieldwork are associated with course assignments; 450 hours of intense, culminating practica occur toward the end of the second year of study. Students seeking an added endorsement in ECSE specialist complete 450 hours of practicum experiences.

# **LEARNING, DEVELOPMENTAL AND FAMILY SCIENCES**

## **Learning, Developmental and Family Sciences MA**

**Office:** Lawrence Street Center, 701

**Telephone:** 303-315-6300

**Fax:** 303-315-6311

**E-mail:** academicservices@ucdenver.edu

**Website:** www.ucdenver.edu/education

## **Faculty**

Faculty information is available online at <https://education.ucdenver.edu/about-us/faculty-directory>



## **Master's Degree**

The MA program in Learning, Developmental and Family Sciences (LDFS) prepares students to facilitate the teaching/learning process and to lead and work in community-based environments. Thus, many students pursue the degree to enhance their skills as professional classroom teachers or lead in the community. The degree also provides skills necessary for a variety of roles in educational and teaching settings or community environments where knowledge of learning, development, understanding family and community systems, motivation, and research is essential such as teaching at the community college and teaching-based colleges and universities levels, teaching adults, consulting, developing assessments, community-based leadership, and conducting program development and evaluation. Other students seek the MA as preparation for advanced study in educational psychology, family science and human development, research, or related fields.

### **Areas of Study**

Two major areas of concentration are available- learning and human development and family relations:

- Regardless of the concentration area selected, all students must demonstrate competence in Learning, Developmental and Family Sciences by successfully completing 30 semester hours of relevant course work;
- Students complete a capstone experience, either an applied project or a master's thesis in consultation with their faculty advisor based on the students' professional and academic goals. Please see final capstone section for more details.

### **Learning**

The concentration is committed to the systematic study of psychological, social, and cultural processes of learning and development, and design of environments that support learning and development, drawing upon multidisciplinary nature of work. The concentration examines learning in various formal and informal contexts (e.g., learning in classrooms, schools, centers, communities, homes) from multiple perspectives (e.g., psychological, sociocultural, design-based, neuroscience). Within the networks of professional and academic communities, students will engage in designing adaptive learning environments that facilitate optimal learning and developmental opportunities for participants in diverse educational and community contexts, including our unique urban context. The Learning concentration offers courses such as: Human Learning; Human Development Over the Life Span; Designing Environments for Learning and Development; Cognition and Instruction; Motivation in Contexts; Mind, Brain and Education; Advanced Child Growth and Development; and Social Contexts of Adolescence.

### **Human Development and Family Relations (HDFR)**

Students will engage in developing their skills to work in and lead community-based organizations including, but not limited to secular, faith-based, for profit, nonprofit, school-based, and local, state, federal and international organizations. The importance of family diversity and social justice is stressed throughout the HDFR curriculum through its courses and experiences. Students can also develop their knowledge in family relations in preparation for doctorate studies in family science and human development or related areas.

The LDFS program does provide a pathway for MA students (HDFR and Learning areas) to pursue their PhD in Education and Human Development with a Family Science and Human Development concentration. For more information, please visit our School of Education and Human Development.

The HDFR area also provides classes to all School of Education and Human Development (SEHD) graduate programs, offering courses in family theories, family dynamics, and diverse family systems, Latino family, school and community systems, family resource management, leadership and organizations, grant writing and fundraising, program development and other family relations based courses.

### **Final Capstone Culminating Applied Project/Thesis**

All LDFS MA students (D1–Downtown Campus) will complete a Capstone Applied Project or Thesis to be able to graduate from the LDFS MA regardless of concentration area. Students who are graduating in the Fall, Spring or Summer of their last year of studies will register for LDFS 6950 Culminating Capstone Experience. LDFS 6950 will only be offered in the Fall semester of each academic year. There will be no Spring or Summer LDFS 6950 sections offered. LDFS 6950 has two focuses, the Applied Project and the second focus the Thesis. The Applied Project is generally completed in one semester during the Fall LDFS 6950 class. However, if a student requires an additional semester that student would have to receive permission from the LDFS 6950 faculty teaching that course section during the Fall semester and their faculty advisor for the additional time. The second focus the Thesis will require 2 semesters to complete or 1 semester and a Summer Session. Please keep in mind the Thesis often requires university approval and IRB approval for Human Subjects research. Students will receive a letter grade upon completion of their Capstone. Students are expected to attend one of the required LDFS MA Capstone Orientation provide by the LDFS faculty during the Fall and Spring semester of each academic year. For more specific details concerning the Capstone please contact your faculty advisor.

# LEARNING DESIGN AND TECHNOLOGY

**Office:** Lawrence Street Center, 701

**Telephone:** 303-315-6300

**E-mail:** [academicservices@ucdenver.edu](mailto:academicservices@ucdenver.edu)

**Website:** <https://education.ucdenver.edu/>

## Faculty

Information about LDT faculty is available online at <https://education.ucdenver.edu/about-us/faculty-directory>

The Learning Design and Technology (LDT) MA program helps people use various digital and social media tools and technologies for learning, teaching, and professional leadership. Applying sound principles of learning, instructional and media design, and professional development, you will use a variety of learning strategies and technologies - such as digital and online media, digital storytelling, social media and networking, games, and smart and mobile tools - to support learning and development goals in school and workplace settings. Throughout the program, you will engage in assessment and evaluation activities to improve services, be accountable for outcomes, and develop professional identities as thought leaders in your professional communities of practice. The LDT MA program is fully online and may be completed in two years.

## Technology Expectations

The LDT MA program relies heavily on computers and related technologies for course delivery and learning activities. Students are expected to use their campus email accounts and check them frequently. Students need convenient, consistent, and reliable access to Internet-connected computers. In addition to textbooks, software purchases may be required or recommended for specific courses.

### Concentration Areas:

Learn more about our Learning Design and Technology degree and endorsement programs in:

- Learning Design and Technology: eLearning Design and Implementation MA
- Learning Design and Technology: Instructional Design and Adult Learning MA
- Learning Design and Technology: Digital Media for Teaching and Learning (K-12) MA
- Learning Design and Technology: Instructional Technology Specialist Endorsement

CU Denver also offers the #1 Teacher Librarian program in Colorado! Our Teacher Librarian Leadership program has changed dramatically in recent years to reflect changes in Learning Design and Technology. School libraries can and should be the heart of the school where students, staff, and administration look for collaborative support. Teacher librarians are now called upon to help lead technology planning, instruction, and professional development, as well as provide students resources to help them succeed in their studies.

Learn more about our Teacher Librarian degree and endorsement programs in:

- Learning Design and Technology: Teacher Library MA
- Teacher Librarian Endorsement

# SCHOOL PSYCHOLOGY

**Program Leader:** Bryn Harris, PhD

**Office:** Lawrence Street Center, 1114

**Phone:** 303-315-6315

**Email:** bryn.harris@ucdenver.edu

**Website:** <https://education.ucdenver.edu/academics/doctoral/detail/School-Psychology-PsyD>

## **Faculty**

Information about faculty in the school psychology program is available online at: <https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/school-psychology>

## **Degree**

The doctor of psychology (PsyD) degree in school psychology is a 100 graduate semester-hour program that leads to eligibility for licensure as a school psychologist by the Colorado Department of Education and licensure as a psychologist by the Colorado State Board of Psychologist Examiners.

The PsyD program at CU Denver is currently Accredited, on Contingency by the American Psychological Association (see the APA Accreditation website for further details). The program is also approved by the National Association of School Psychologists (NASP). The PsyD training program aligns with accreditation standards and the following domains of psychology: affective, biological, cognitive, and developmental aspects of behavior; data-based decision-making and accountability; consultation and collaboration; interventions and mental health services to develop social and life skills; school-wide practices to promote learning; preventative and responses services; family-school collaboration services; diversity in development and learning; research and program evaluation; and legal, ethical and professional practice.

Consistent with a practitioner-scholar model, the PsyD Program in School Psychology prepares professional school psychologists through rigorous academic study integrated with intensive supervised clinical practice. The program includes an emphasis on the delivery of culturally-responsive mental health services in schools, as well as the development of advanced level practice skills. The Program stresses the application of scholarly findings to practice, as well as a respect for all aspects of diversity. Graduates of this program are license eligible for independent practice in schools, hospitals, child agencies and clinics, and other settings.

## **Bilingual School Psychologist Concentration Option**

This optional specialization provides School Psychology students with the knowledge and skills to effectively serve bilingual learners in the school setting. In addition to the

three required courses and practicum component, the Bilingual School Psychologist concentration consists of language proficiency assessments to ensure that school psychologists are adequately proficient in another language to provide psychoeducational services. CU Denver provides one of the few bilingual school psychology concentration areas in the country making our graduates even more desirable in their future endeavors.

## **Admission Requirements**

Successful applicants to the school psychology (SPSY) program will have obtained a minimum 3.2 undergraduate GPA and a combined score of at least 300 on the verbal and quantitative sections of the Graduate Record Exam (GRE) and a minimum score of a 3.5 on the written portion of the GRE. Applicants will also submit a current resume or vita, a personal statement that outlines their reasons for pursuing a degree in school psychology at CU Denver, and three letters of recommendation. The highest ranked applicants will be invited to a full-day group interview that includes a program orientation, a writing assignment, and a campus tour.

- Application materials are available at: <http://www.ucdenver.edu/admissions/Pages/index.aspx>. All materials must be submitted online by December 1 for fall semester admissions. Application materials include the following:
- \$50 application fee for domestic students, \$75 application fee for international students (may be paid via credit card, e-check or by mailing in a check)
- letter of intent/personal statement
- resume or vita
- three letters of recommendation
- one official transcript from each higher education institution attended (in the original, sealed envelope)
- official GRE scores sent directly to the University of Colorado Denver. The GRE is a general scholastic aptitude test that yields separate verbal and quantitative scores. A minimum score of 300 (verbal score + quantitative score) with an approximate score of 3.5 on the written portion is required for consideration as an applicant. When taking the GRE use the code number for CU Denver, 4875, to ensure scores will be sent electronically to CU Denver. GRE scores are required for the School Psychology program unless you already hold a Doctoral Degree.

**Program Requirements**  
School Psychology PsyD

# **RESPONSIVE LITERACY EDUCATION**

**Office:** Lawrence Street Center, 701  
**Telephone:** 303-315-6300  
**E-mail:** academicservices@ucdenver.edu

The Responsive Literacy Education program provides educators with advanced knowledge and training to work with diverse student populations as they develop reading, writing and oral language skills. Course work includes language and literacy acquisition, culturally relevant teaching practices, literature, literacy assessment and informed instruction, hands-on practice, and other areas.

### **Faculty**

Information about faculty in this program is available online at <https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/literacy-education>

### **Program Options**

- Literacy Education MA
- Literacy Education MA with Reading Teacher K-12 Endorsement
- Literacy Education MA in English Education
- Reading Teacher K-12 Endorsement
- Certificates:
  - Early Literacy
  - Literacy and Language Development for Diverse Learners

The MA degree options in Literacy Education will enhance your literacy instruction skills and credentials while providing advanced knowledge and training to work with diverse student populations as they develop reading, writing, and oral language skills. The program requires access to students in order to complete the methods courses. We stress the importance of recognizing a variety of literacies - home, school, community, and mainstream - in both first and second languages, and the meaningful use of literacy and language to improve students' quality of life.

By placing emphasis on the reading, writing, oral and visual language development of culturally, linguistically and academically diverse student populations, this master's program is at the forefront of the field. Language is approached from a socio-psycholinguistic perspective that emphasizes the learner's construction of meaning rather than the learning of isolated skills. Importance is placed on using theory, inquiry and personal reflection to inform classroom practice. The program prepares teachers to become decision makers capable of developing learner-centered curricula where each student's reading and writing abilities are assessed to address developmental or special needs.

# CULTURALLY AND LINGUISTICALLY DIVERSE EDUCATION

**Office:** Lawrence Street Center, 701

**Telephone:** 303-315-6300

**E-mail:** academicservices@ucdenver.edu

The Culturally and Linguistically Diverse Education (CLDE) program helps licensed teachers enhance their skills and credentials to support diverse languages, cultures, and abilities in the classroom. Graduates are prepared to become leaders to serve multilingual learners in K-12 classrooms. This program emphasizes a socio-cultural approach to issues of language and learning, acknowledging the legitimacy of linguistic and cultural differences, and recognizing that academic settings represent important socializing forces in students' lives. We emphasize the "whole learner" in our teaching and in teacher education, understanding that individuals do not merely add a language to their repertoire of communication but make fundamental identity adjustments as they progress in their studies. Course work includes language teaching methodology, language acquisition, linguistic analysis of English, multicultural foundations, assessment, literacy, and other areas.

The MA program also provides a foundation in teaching English to multilingual learners in a variety of contexts in the United States and abroad. Teachers who work in CLDE programs or in other content areas (such as art, language arts, math, music, science, social studies or technology), and who wish to integrate CLDE principles and strategies into their instruction for their multilingual learners, will find the MA program relevant to their interests and goals.

This program has been developed as an advanced course of study for practicing teachers or individuals with some teaching experience. Applicants who are new to teaching, and who wish to teach in U.S. K-12 public school settings, should inquire about the Master of Arts in Teaching.

The program is intended for:

- graduate-level students interested in the master's degree (30 semester hours) with or without the added endorsement to a current license.
- licensed elementary and secondary teachers returning to acquire Colorado endorsement credentials (24 semester hours)
- endorsed CLDE teachers who wish to add the Culturally and Linguistically Diverse Bilingual Education endorsement

Non-degree option:

Licensed elementary and secondary teachers returning to graduate studies for a certificate to aid them in helping their English language learners succeed (TCLD: 9 semester hours)

**Program Options:**

- Master of Arts in Culturally and Linguistically Diverse Education
- Master of Arts in Culturally and Linguistically Diverse Education with K-12 Endorsement
- Culturally and Linguistically Diverse Education Endorsement: K-12
- Culturally and Linguistically Diverse Bilingual Specialist Endorsement

Non-degree option:

- Teaching for Cultural and Linguistic Diversity (TCLD) Certificate

## STEM EDUCATION

**Office:** Lawrence Street Center, 701

**Telephone:** 303-315-6300

**E-mail:** academicservices@ucdenver.edu

The STEM Education program promotes elementary and secondary mathematics and science teachers' passion, confidence, and competence in providing mathematics and science teaching-learning processes informed by insightful theories, effective learning activities, and innovative teaching strategies, as well as by international perspectives. This program focuses on the integration of theory, research, and practice to enable teachers to make instructional decisions and implement mathematics and science lessons that promote students' conceptual understandings and problem solving, including opportunities for doing research.

**Faculty**

Information about faculty in this program is available online at: <https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/stem-education>

**Program Options**

- STEM Education MA with a concentration in Mathematics Education: On Campus
- STEM Education MA with a concentration in Mathematics Education: Online
- STEM Education MA with a concentration in Science Education
- STEM Education MA with a concentration in Math and Science Education
- Master of Science in Education in Mathematics Education MSED
- Middle School Math Endorsement
- Graduate Certificate in Mathematical Content Knowledge for Teaching

## SPECIAL EDUCATION



**Office:** Lawrence Street Center, 701  
**Telephone:** 303-315-6300  
**E-mail:** academicservices@ucdenver.edu  
**Website:** www.ucdenver.edu/education

The Special Education (SPED) program offers three options: an MA degree, an MA degree plus Special Education Generalist Endorsement, Ages 5-21 and an endorsement only. The SPED program emphasizes the development of reflective practitioners through trans-disciplinary training, fosters reflective inquiry about teaching and learning, as well as the development of the skills, knowledge, and dispositions necessary to teach in elementary and secondary classrooms serving students with disAbilities. Reflection and inquiry provide an informed and integrated basis for advocating for all learners.

The time needed to complete the various special education program options varies based on previous experience, coursework, and needs of students. In addition to traditional on-campus offerings, a wide selection of courses are available in online formats. During the academic year, core special education courses are typically scheduled in late afternoons and evenings to avoid conflict with teaching responsibilities.

If you are **NOT** a teacher and are seeking an initial teaching license in Special Education, please see our Master of Arts in Teaching program.

If you are interested in the Early Childhood Special Education Specialist (Birth-8 years) endorsement, please see the Early Childhood Special Education Specialist Endorsement program.

**MA SPED Degree, MA Degree + SPED Endorsement, and SPED Endorsement Only**

<b>MA Degree: Personalized Professional (no license or endorsement)</b>	<b>MA Degree + Endorsement</b>	<b>Endorsement Only</b>
Special Education	MA in Special Education with Special Education Generalist (Ages 5-21) Endorsement	Special Education Generalist Endorsement Only

The Master of Arts (MA) in Special Education offers two degree paths:

1. MA in Special Education (Personalized Professional): The customizable 30 credit hour MA path provides the opportunity for you to tailor your coursework to your specific needs as an educator. Students have the flexibility to choose courses from across all SEHD programs for additional learning from the from the Thematic Course Categories list to allow for a more in-depth approach to the field. The Thematic Course Categories is a collection of courses across all SEHD disciplines designed to allow students to expand student learning. **This MA does NOT lead to a license or an endorsement.**
2. MA plus endorsement: The MA plus endorsement allows students to complete an MA, and add a SPED Generalist Ages 5-21 endorsement to their current teaching

license. Recommendation for endorsement is made by the SPED Program, but endorsement is granted by the State of Colorado. Individual State requirements vary and may include teaching experience and in addition to a valid teaching credential. Students should consult with the Colorado Department of Education or the state in which they wish to be endorsed for the most updated endorsement requirements.

# RESEARCH AND EVALUATION METHODS

**Office:** Lawrence Street Center, 701  
**Telephone:** 303-315-6300  
**Email:** [academicservices@ucdenver.edu](mailto:academicservices@ucdenver.edu)  
**Website:** <https://education.ucdenver.edu/>

The MA in Research and Evaluation Methods (REM) degree prepares students to lead in professional practice in the following responsibilities: (1) interpreting, analyzing, and applying research in educational settings; (2) applying knowledge about research methods, statistics, and measurement; and (3) applying inquiry skills and creative thought in solving practice-based problems. Graduates of the program typically work in school district research/assessment departments, state or federal government agencies, research and evaluation firms, non-profit organizations, or companies that have data/research offices.

Students acquire the skills necessary for a variety of roles in educational and teaching settings or community environments where knowledge of learning, development, assessment, and research is essential. Many of our graduates also seek this MA as preparation for advanced study in educational psychology, assessment, research methods, and related fields.

## Faculty

Focusing on applied skills and techniques, students will learn both quantitative and qualitative research methods. Through research and data analysis, students are encouraged to focus on larger issues of social injustices.

Information about faculty in this program is available [here](#).

### Program Options:

- Research and Evaluation Methods MA
- Research and Evaluation Methods MA with a concentration in Assessment

# MASTER OF ARTS IN TEACHING

1380 Lawrence Street Center, Suite 701  
**Telephone:** 303-315-6300

**Email:** academicservices@ucdenver.edu

**Website:** <https://education.ucdenver.edu/>

**Mailing Address**

School of Education & Human Development

P.O. Box 173364, Campus Box 106

Denver, CO 80217-3364

## **Graduate Teacher Education Program Overview**

The Graduate Teacher Education program culminates in a Master of Arts in Teaching and an initial teacher license. The program prepares educators who are culturally affirming and responsive, collaborate closely with families and communities, and have the knowledge and skills to create engaging, relevant, and rigorous classroom communities where all students can achieve and grow. We work alongside our P-12 partner educators throughout the CU Denver Professional Development School Network comprised of over 20 urban schools across numerous districts in the Denver metro region. Teacher education students live the life of a teacher for an entire academic year while enrolled in the program through a series of residency internships in a professional development school. Ultimately our goal is that all teacher candidates- whether their emphasis is elementary, secondary, or special education- have the unique knowledge and skills to positively impact urban and diverse schools and act with a sense of urgency to support equity in education for all children. The Graduate Teacher Education Program is a nationally accredited program that exceeds expectations.

## **Education Pathways**

The graduate teacher education program at CU Denver is designed to allow individuals with a minimum of a bachelor's degree to seek a master's degree along with an initial Colorado teacher's license in the following areas:

- **Elementary Education (K-6)** (48 semester hours)
- **Secondary Education (7-12)** (39 semester hours)
  - English
  - Mathematics
  - Science (General Science, Biology, Earth Science, Physics, Chemistry)
  - Social Studies
  - World Language (K-12) (Spanish, French)
- **Middle School Math (6-8)** (39 semester hours)
- **Special Education Generalist (Ages 5-21)** (54 semester hours)
- **Dual General Education/Special Education (63-72 semester hours)**

## **Program Structure**

The program admits teacher candidates in cohort groups that begin either in the summer or fall. The cohort model provides a unique learning community for candidates

and engenders significant support for success. The program includes full time 1 - 1.5 year licensure plans for regular education and a 1.5 - 2 year full-time option for initial special education and dual special education. Students enroll in course work at the university and clinical internships in one of CU Denver's professional development schools throughout the program. By enrolling in several courses and internships together, elementary, secondary, and special education teacher candidates are well prepared to support K-12 students with a wide range of diverse needs.

## **Clinical Experience in Professional Development Schools**

While in the program, teacher candidates intern in a professional development school for an entire academic year, gradually beginning with two days a week early on and increasing over time to five days per week by the end of the program. University courses are closely integrated with the sequence of clinical internship experiences providing teacher candidates with multiple opportunities to engage in the authentic work of teachers. Teacher candidates co-teach closely with practicing teachers in the school and gradually assume full responsibility for teaching by the end of the program. Elementary teacher candidates generally spend an entire academic year in a single partner elementary school, whereas secondary teacher candidates spend their internships in one of the partner middle schools and one of the partner high schools. Special education teacher candidates complete internships at multiple levels, P-12 due to the wide-span of their license that enables them to support students with special needs ages 5-21. The schools are located in several Denver metropolitan districts serving large populations of low-income and/or minority students, as well as a sizeable number of students for whom English is a second language as well as students with special needs. Each school is supported by a site professor from the university one day per week and by a master teacher, called a site coordinator, who supports teacher candidates through their academic year of internships.

## **Assessment**

Both the coursework and the internship experiences have been created to align with the Colorado Teacher Quality Standards, as well as frameworks for culturally and linguistically responsive instruction and Universal Design for Learning. Students in all programs engage in a common set of learning opportunities and internship assessments. They also engage in Program Level Assessments at different stages of the program. Colorado mandates that all teacher education programs be "performance-based" in order to recommend candidates completing the program for licensure; thus all candidates in the Urban Community Teacher Education program must demonstrate proficiency in both the university-based coursework and their internships.

## **Programs of Study**

Due to the complex nature of teacher preparation that is governed by state and national accreditation and legislative mandates that can change from year to year, please see current programs of study in the teacher education handbook.

## Requirements for Admission

**Admission Deadline:** February 15 for summer and April 1 for fall start dates.

### Graduate Teacher Education Admission Requirements

Competitive undergraduate cumulative GPA of 3.0 (Students with a lower GPA may be considered under certain conditions. Please see SEHD website.)

- Completion of any outstanding prerequisite content courses that are needed per a transcript evaluation. Consult with your advisor to create a plan for completing these requirements.
- A complete application which can be obtained online at <https://education.ucdenver.edu/academic-services/admissions> which includes transcripts, essays, recommendations, and an interview.
- Attend an admissions interview. All individuals who submit a COMPLETE application will receive an email with the interview invitation that contains all details approximately one week before the scheduled interview. During this group interview, prospective students participate in highly interactive group discussions and activities to further assess each applicant's readiness as well as aid in internship placement.

# COLLEGE OF ENGINEERING, DESIGN AND COMPUTING

Dean Martin Dunn

Senior Associate Dean of Computing Initiatives Douglas Sicker

Senior Associate Dean of Innovation and Engagement Kristin Wood

Associate Dean of Academic Initiatives Keith Jones

Associate Dean for Student Affairs Bruce Janson

## Contact

**Office:**

North Classroom 3034

1200 Larimer Street, 3rd Floor

**Telephone:** 303-315-7170

**Fax:** 303-315-7173

**Email:** [engineering@ucdenver.edu](mailto:engineering@ucdenver.edu)

**Mailing Address:**

College of Engineering, Design and Computing

Campus Box 104

P.O. Box 173364

Denver, CO 80217-3364

## **Application Deadlines**

Applicants must make arrangements to ensure all their materials (including transcripts, references, and any required test scores) are received by the relevant deadlines below. Applications with outstanding materials are considered incomplete and will be canceled unless a request for deferment to a later term is requested.

### **Domestic Applicants**

#### **Bioengineering** (fall admittance only)

- MS: April 15 priority; July 15 final
- PhD: December 1

#### **Civil Engineering**

- MS/MEng/PhD: fall - May 1; spring - October 1; summer - February 15

#### **Computer Science**

- MS/CSIS PhD: fall - May 1; spring - December 1

#### **Electrical Engineering**

- MS/MEng: fall - May 15; spring - November 30

#### **Mechanical Engineering**

- MS/MEng: fall - May 1; spring - October 1

#### **Engineering and Applied Science PhD**

- fall - February 1; spring - September 1

### **International Applicants**

#### **Bioengineering** (fall admittance only)

- MS: March 15
- PhD: December 1

#### **Civil Engineering**

- MS/MEng/PhD: fall - April 15; spring - September 15; summer - February 1

#### **Computer Science**

- MS/CSIS PhD: fall - April 15; spring - September 15

#### **Electrical Engineering**

- MS/MEng: fall - May 15; spring - November 30

#### **Mechanical Engineering**

- MS/MEng: fall - April 15; spring - September 15

## Engineering and Applied Science PhD

- fall - February 1; spring - September 1

## Overview

The College of Engineering, Design and Computing at the University of Colorado Denver meets the needs of the Denver metropolitan area by providing nationally accredited engineering education programs in a flexible format that suits both students and employers. Recognizing the importance for students to pursue professional studies and related employment simultaneously, the college offers undergraduate and graduate degree programs in bioengineering, civil engineering, mechanical engineering, electrical engineering and computer science through late afternoon and evening studies or through a more traditional schedule of day classes. As a practicing engineer, you can improve and update your professional capabilities and earn a graduate degree. Or, through our interdisciplinary master of engineering degree, you can obtain graduate education in business, management, computer science, behavioral science or other areas together with new engineering skills in your field.

A listing of the fields in which engineers work would have hundreds of entries. The following list is a brief summary of the engineering fields available at CU Denver.

**Bioengineering** offers opportunities for interdisciplinary graduate training for master of science and doctor of philosophy degrees. Our programs are uniquely integrated with the CU Anschutz Medical Campus. Students enjoy opportunities to learn from clinicians and engineers and to perform research or medical device design in world-class hospitals and clinical research labs. Bioengineering is one of the fastest growing job markets this decade, according to the Bureau of Labor Statistics. A degree in this area provides numerous opportunities to work in health care, biomedical industry, government regulatory agencies and academia.

**Civil engineering** offers interesting and challenging careers in the design and construction of buildings, bridges, dams, aqueducts and other structures; in transportation systems including highways, canals, pipelines, airports, rapid transit lines, railroads and harbor facilities; in the distribution of water and the regulation of rivers; in the development of water resources for urban use, industry and land reclamation; in the control of water quality through water purification and proper waste treatment; in the construction and contracting industry; and in the problems concerned with our physical environment and the growth of cities.

**Computer science** offers graduates the solid foundation needed for jobs in computing and enabling technology encompassing many areas across diverse fields such as healthcare, business, natural & applied sciences, mathematics and visual arts. Career paths in computer science involve designing and implementing software, devising new computer applications and developing effective ways to solve computing problems.

**Electrical engineering's** graduate program prepares students for technical leadership roles in industry, academia and government in our rapidly changing technological world. The program offers numerous specialties within electrical engineering, including computer engineering, embedded systems, electromagnetics, microwave systems, optics, electrical neuroscience engineering, control systems, communications and signal

processing, power systems, smart grids, renewable energies, VLSI system design, and electron devices.

**Mechanical engineering** offers a wide range of interesting and challenging career opportunities in research, design, development, manufacturing, testing and marketing for either private industry or government. Mechanical engineers help develop a wide range of products such as engines, transmissions, compressors, pumps, oil field drilling rigs, missiles, space satellites, earth-moving equipment, container-manufacturing machines, medical equipment and many other products encountered in daily life.

## **Comcast Media and Technology Center**

**Website:** [www.comcastmediatechcenter.org](http://www.comcastmediatechcenter.org)

Established to be the premier scholarly hub for design innovation research and practice, the Comcast Media and Technology Center uses an interdisciplinary methodology and combines academic theories with practical applications in a technologically advanced setting. This unique approach is then applied to relevant societal challenges to produce imaginative solutions in engineering and design.

Born from the powerful partnership that exists in Denver within the public and private sectors, and made possible by generous contributions from the Comcast Corporation, the Comcast Media and Technology Center is a state-of-the-art, 1,900 sqft innovation suite located within the Tivoli Student Union in the heart of CU Denver's Auraria Campus. It serves as a catalyst for innovation for the College of Engineering, Design and Computing and the College of Arts & Media, as an exciting example of the experiential learning that can happen for students in an encouraging interdisciplinary environment.

Projects overseen by center staff are assessed with-in a research-based theoretical framework in a forum where creative ideation is encouraged. Team members are chosen because of their diverse academic backgrounds to work in intentionally arranged interdisciplinary groups to complete assignments, where they are encouraged to utilize their unique skill sets, and scholarly experiences to problem solve and create solutions. Specific projects can vary from design work (digital or practical), research, ideation, production, fabrication, prototyping, testing, data collection, systems design, process modeling, focused research/analysis or application, simulation, 4D/3D printing, data visualization, industry/market studies, and reporting creating an opportunity to learn and grow new skillsets.

## **Graduate Study in Engineering**

The College of Engineering, Design and Computing offers graduate programs in bioengineering, civil engineering, computer science and engineering, electrical engineering and mechanical engineering, as well as an interdisciplinary doctoral degree in engineering and applied science.

For information regarding courses and requirements leading to the master of science, master of engineering or the PhD degree, see the appropriate discipline heading in this



section. For general graduate admission information and policies, see the Information for Graduate Students section of this catalog.

## **TOEFL/Language Requirements**

For the most up-to-date information about TOEFL/language requirements, please visit the Office of International Admissions website.

## **Education for Employed Professional Engineers**

Continuing education for employed engineers grows more important each year. Therefore, the college puts great emphasis upon making graduate courses available through late afternoon and evening courses. The master of engineering degree permits graduate students more flexibility in defining specialized interdisciplinary fields that meet their professional needs. This degree has standards equivalent to those of the master of science degree.

## **Nondegree Students**

Nondegree graduate students may apply 9 semester hours of graduate-level course work toward a master's degree in engineering from CU Denver.

## **Programs of Study**

Courses listed in the following curricula are typical illustrations. Changes in specific courses may be necessary to accommodate students' needs and/or changes in institution requirements; students should take courses in logical sequence.

### **Programs**

#### **Doctor of Philosophy**

- Engineering and Applied Science PhD

### **Bioengineering**

Go to information for Bioengineering.

### **Programs**

#### **Doctor of Medicine/Doctor of Philosophy**

- Bioengineering MD-PhD

#### **Doctor of Medicine/Master of Science**

- Bioengineering MD-MS

### **Doctor of Philosophy**

- Bioengineering PhD

### **Master of Business Administration/Master of Science**

- Bioengineering Dual MS-MBA

### **Master of Science**

- Bioengineering MS

## **Civil Engineering**

Go to information for Civil Engineering.

### **Programs**

#### **Certificate**

- Construction Project Management Graduate Certificate
- Graduate Certificate: Geographic Information Systems and Geomatics

#### **Doctor of Philosophy**

- Civil Engineering PhD

#### **Master of Science**

- Civil Engineering MS and MEng

## **Computer Science and Engineering**

Go to information for Computer Science and Engineering.

### **Programs**

#### **Certificate**

- Cyber Security and Defense Graduate Certificate
- Software Engineering Graduate Certificate

### **Doctor of Philosophy**

- Computer Science and Information Systems PhD

### **Master of Science**

- Computer Science MS

## **Electrical Engineering**

Go to information for Electrical Engineering.

### **Programs**

#### **Master of Engineering**

- Electrical Engineering MEng

#### **Master of Science**

- Electrical Engineering MS

## **Mechanical Engineering**

Go to information for Mechanical Engineering.

### **Programs**

#### **Master of Engineering**

- Mechanical Engineering MEng

#### **Master of Science**

- Mechanical Engineering MS

# **BIOENGINEERING**

**Chair:** Robin Shandas

**Office:** Room 1307K Bioscience 2 - building Y18 (Anschutz Medical Campus)

**Telephone:** 303-724-5893

**Fax:** 303-724-5800

**E-mail:** [bioengineering@cuanschutz.edu](mailto:bioengineering@cuanschutz.edu)

**Website:** [engineering.ucdenver.edu/bioengineering](http://engineering.ucdenver.edu/bioengineering)

## **Faculty**

### **Core Faculty**

Robin Shandas, PhD

Professor

[robin.shandas@cuanschutz.edu](mailto:robin.shandas@cuanschutz.edu)

Specialties: Novel methods for translational bioengineering

Richard Benninger, PhD

Associate Professor

[richard.benninger@cuanschutz.edu](mailto:richard.benninger@cuanschutz.edu)

Specialties: Optical microscopy, pancreatic islet biology and biophysics, diabetes

Cathy Bodine, PhD

Associate Professor

[cathy.bodine@cuanschutz.edu](mailto:cathy.bodine@cuanschutz.edu)

Specialties: Assistive technology, rehabilitation engineering

Emily Gibson, PhD

Assistant Professor

[emily.gibson@cuanschutz.edu](mailto:emily.gibson@cuanschutz.edu)

Specialties: Microfluidics technology, optical microscopy, and spectroscopy

Jeffrey Jacot, PhD

Associate Professor

[jeffrey.jacot@cuanschutz.edu](mailto:jeffrey.jacot@cuanschutz.edu)

Specialties: Stem cells and heart tissue engineering

Vitaly Kheyfets, PhD

Assistant Research Professor

[vitaly.kheyfets@cuanschutz.edu](mailto:vitaly.kheyfets@cuanschutz.edu)

Specialties: Vascular/ventricular function, cellular metabolism in cardiovascular disease, and pulmonary hypertension

Cassandra Howard, MSC

Instructor

[cassandra.howard@cuanschutz.edu](mailto:cassandra.howard@cuanschutz.edu)

Specialties: Medical device innovation and biodesign

Kendall Hunter, PhD

Associate Professor

[kendall.hunter@cuanschutz.edu](mailto:kendall.hunter@cuanschutz.edu)

Specialties: Soft tissue mechanics, vascular and cardiac imaging diagnostics, translational biomechanics

Steven Lammers, PhD

Instructor

steven.lammers@cuanschutz.edu

Specialties: 3D printing & design, bioprintable materials, tissue engineering of 3D cellularized scaffolds

Craig Lanning, MS

Research Instructor

craig.lanning@cuanschutz.edu

Specialties: Digital manufacturing, reverse engineering, medical device and software design

Chelsea Magin, PhD

Assistant Professor

chelsea.magin@cuanschutz.edu

Specialties: Bio-inspired materials for tissue engineering, R & D product development

Keith Neeves, PhD

Professor

keith.neeves@cuanschutz.edu

Specialties: Hematology and oncology

Daewon Park, PhD

Associate Professor

daewon.park@cuanschutz.edu

Specialties: Biomaterials, drug delivery, tissue engineering and regenerative medicine

Bradford Smith, PhD

Assistant Professor

bradford.smith@cuanschutz.edu

Specialties: Lung structure-function relationships, optimized mechanical ventilation, and high performance computing

Jennifer Wagner

Instructor

jennifer.wagner@cuanschutz.edu

Specialties: Medical imaging, 3D modeling, surgical guides/tools, tissue engineering, and material characterization

Richard Weir, PhD

Research Associate Professor

richard.weir@cuanschutz.edu

Specialties: Neural engineering, biomechatronic design, and rehabilitation engineering

Michael Yeager  
Associate Clinical Professor  
michael.yeager@cuanschutz.edu

Specialties: Cardiopulmonary disease, autoimmunity, in vivo cell lineage tracing & imaging

Bryan Yunker, PhD  
Research Instructor  
bryan.yunker@cuanschutz.edu

Specialties: Product design & development, product marketing, intellectual property, reconstructing physical anatomy in virtual reality

### **Affiliated Faculty**

Students receive instruction from affiliate faculty in the University of Colorado system, including CU Boulder and the CU School of Medicine. Faculty research areas include imaging and biophotonics, cardiovascular biomechanics and hemodynamics, orthopedic biomechanics, neuromuscular control and assistive technology, surgery and urological sciences, ophthalmology, neuroscience engineering, polymers and diabetes. Please consult our website ([ucdenver.edu/bioengineering](http://ucdenver.edu/bioengineering)) for more information.

## **Mission Statement**

The Department of Bioengineering bridges the fields of engineering and medicine with a core mission of applying engineering principles and analyses to improving human health. The department will fulfill this mission by providing opportunities for training, research, and service in bioengineering to faculty, students, and residents of Colorado and the greater Rocky Mountain region.

## **Program Objectives**

The Department of Bioengineering offers high-quality training in bioengineering that is both flexible and multidisciplinary. A design-based focus permeates every aspect of our training philosophy which can be summarized by the following question: what does the user want and how can I best utilize my bioengineering training to achieve this need? Our academic instruction focuses on developing core competencies in life sciences, quantitative methods, technology, and research methods.

## **Graduate Program**

All graduate students begin the program with intensive study of the bioengineering core. In consultation with an advisor, each student chooses elective courses, training pathways, and research to fit talents, preparation, and career plans. Students earn the MS, MS-MBA, MD-MS, MD/PhD, or PhD degree in bioengineering with a choice of training pathways in basic research, clinical applications, or commercialization of

medical technologies. Graduate School Rules apply to all programs. Please consult our website ([ucdenver.edu/bioengineering](http://ucdenver.edu/bioengineering)) for more information on admissions requirements, degree requirements, core courses, training pathways and faculty research areas.

## Programs

- Bioengineering Dual MS-MBA
- Bioengineering MD-MS
- Bioengineering MD-PhD
- Bioengineering MS
- Bioengineering PhD

# CIVIL ENGINEERING

**Chair:** Kevin L. Rens

**Associate Chair:** Bruce Janson

**Office:** North Classroom 3037

**Telephone:** 303-315-7160

**Fax:** 303-315-7158

**Website:** [engineering.ucdenver.edu/civil](http://engineering.ucdenver.edu/civil)

## Faculty

### Professors:

Nien-Yin Chang, PhD, Ohio State University, PE-Ohio and Colorado

James C.-Y. Guo, PhD, University of Illinois at Urbana-Champaign, PE-Colorado

Bruce N. Janson, PhD, University of Illinois at Urbana-Champaign

Yail Jimmy Kim, PhD, Queen's University, PE-Canada

Kevin L. Rens, PhD, Iowa State University, PE-Colorado

Jonathan T.H. Wu, PhD, Purdue University

### Associate Professors:

Caroline Clevenger, PhD, Stanford University, PE, RA-Colorado

Arunprakash Karunanithi, PhD, University of Connecticut

Chengyu Li, PhD, Arizona State University; PE-Colorado, North Carolina, New Mexico,

Washington; SE-Utah, Arizona, Washington

Wesley Marshall, PhD, University of Connecticut, PE-Connecticut

David C. Mays, PhD, University of California at Berkeley, PE-Colorado, California

### Assistant Professors:

Moatassem Abdallah, PhD, University of Illinois at Urbana-Champaign

Heidi Brothers, PhD, University of Cincinnati

Allison Goodwell, PhD, University of Illinois at Urbana-Champaign

Frederick R. Rutz, PhD, University of Colorado, PE-Colorado

**Professors Emeriti:**

Paul E. Bartlett, MS, University of Colorado, PE-Colorado  
David W. Hubly, PhD, Iowa State University, PE-Colorado  
Lynn E. Johnson, PhD, Cornell University, PE-Connecticut  
Oren G. Strom, PhD, University of Texas at Austin

## Mission Statement

The mission of the Department of Civil Engineering:

- deliver high-quality comprehensive degree programs (BS, MS, MEng, PhD, EAS PhD) to all of our students at both the undergraduate and graduate levels
- matriculate students who excel in professional practice and leadership and who possess compassion and respect for people of all cultural backgrounds
- teach our classes with excellence, whether in a traditional classroom setting or online
- offer our students state-of-the-art laboratories, equipment and classrooms with the latest technology needed for a complete learning experience
- develop ambitious and innovative research programs involving both faculty and students through funding from federal, state and local sources
- provide supportive mentoring and guidance to our students through teaching, research and advising
- produce students who can work as leading professionals in civil engineering and in many other fields for which civil engineering knowledge can be a foundation

## Graduate Program

### Requirements for Admission

Applicants to the master of science in civil engineering (MS) program must satisfy all requirements specified in the Information for Graduate Students chapter of this catalog. Most applicants have an ABET accredited undergraduate degree in civil engineering. An undergraduate GPA of 3.0 (on a 4-point scale) or better is required for regular admission. Applicants must submit evidence of adequate preparation for graduate study by either (a) submitting official GRE scores, or (b) documenting an earned bachelor's degree with a GPA of 3.00 or higher from an institution accredited by a U.S. accreditation body, or an earned master's degree with a GPA of 3.50 or higher from an institution accredited by a U.S. accreditation body. Applicants whose undergraduate degree is in a field other than civil engineering may also be admitted into the MS in civil engineering degree program, if they have or will complete undergraduate prerequisite courses as required by the Department of Civil Engineering and the student's graduate advisor.



Applicants to the master of engineering (MEng) program must have a baccalaureate degree in engineering, math, science, economics or planning from an accredited college or university and satisfy all requirements specified by the Graduate School.

Prospective PhD students should contact the Department of Civil Engineering to inquire about application requirements and to obtain the “Rules and Policies for the Coordinated PhD Program,” a coordinated program with the University of Colorado Boulder.

In addition to the coordinated Civil Engineering PhD, the multidisciplinary engineering and applied science PhD is available through the Department of Civil Engineering.

Requests for applications for graduate study in civil engineering should be addressed to CU Denver Department of Civil Engineering, Campus Box 113, P.O. Box 173364, Denver, CO 80217-3364.

Applicants who are not citizens or permanent residents of the United States should apply through the Office of International Admissions, Campus Box 185, P.O. Box 173364, Denver, CO 80217-3364. All applicants for admission must submit complete credentials as outlined in the instructions that accompany the application materials.

# COMPUTER SCIENCE AND ENGINEERING

**Chair:** Gita Alaghband

**Program Manager:** Christina Ridd

**Administrative Assistant:** Megan Rogers

**Office:** Lawrence Street Center, 8th Floor

**Telephone:** 303-315-1408

**Fax:** 303-315-1410

**Website:** [engineering.ucdenver.edu/cse](http://engineering.ucdenver.edu/cse)

## Faculty

### Professors

Gita Alaghband, PhD, University of Colorado

Research areas: parallel and distributed systems, parallel algorithms, applications and languages, high-performance computing

Tom Altman, PhD, University of Pittsburgh

Research areas: algorithms, optimization, theory

Min-Hyung Choi, PhD, University of Iowa

Research areas: computer graphics, animation, virtual reality, human computer interface

### **Associate Professors**

Ellen Gethner, PhD, University of British Columbia; PhD, Ohio State University  
Research areas: graph theory, number theory, combinatorics, discrete geometry, computational geometry, visualization, algorithms

Ilkyeun Ra, PhD, Syracuse University

Research areas: computer networks, cloud computing, high-performance computing, distributed computing systems

### **Assistant Professors**

Farnoush Banaei-Kashani, PhD, University of Southern California

Research areas: big data, data science, data management and mining, database systems, applied machine learning, computational biomedicine and biology

Ashis Biswas, PhD, University of Texas at Arlington

Research areas: machine learning, data mining, big data analysis, bioinformatics

Liang He, PhD, Nankai University

Research areas: cyber-physical systems, cognitive battery management, IoTs, mobile computing

Haadi Jafarian, PhD, University of North Carolina Charlotte

Research areas: proactive security for cyber threats, big data analytics for cyber threat intelligence, security for cyber-physical systems & critical infrastructures, security for IoTs, security analytics & automation, science of security

### **Assistant Professors (Clinical Teaching Track)**

Madhuri Debnath, PhD, University of Texas at Arlington

Research areas: data mining, spatio-temporal data analysis, data science, machine learning

Salim Lakhani, PhD, Purdue University

Research areas: cloud computing and security, distributed computing & database systems

### **Senior Instructor (Clinical Teaching Track)**

Diane Yoha, MS, University of Colorado Denver

Research areas: artificial intelligence, linguistic geometry, natural language processing

### **Professor Emeriti**

Boris Stilman, PhD, National Research Institute for Electrical Engineering, Moscow, Russia

## **Mission Statement**

With the advances in technology and the rapid and prevalent growth of the information-based economy, computer science has become an enabling science for nearly all disciplines that impact engineering, science, business, health and government. The future of the discipline promises even more innovative advances. The Department of Computer Science and Engineering at the University of Colorado Denver is committed

to providing outstanding education and research training to our diverse undergraduate and graduate students for productive careers in industry, academia and government in the Denver metropolitan area, state and beyond. Our faculty strives for excellence in teaching, research and service by covering a broad spectrum of the discipline's core fundamentals, as well as applied aspects including those of interdisciplinary nature. We actively engage our students in classroom and out-of-classroom research and help them develop the skills needed to solve complex real-world technological problems of modern society.

The Department of Computer Science and Engineering offers MS and PhD degrees:

- The MS degree is awarded in computer science (CS) to those students who wish to pursue graduate studies to further develop their education. The MS in CS graduate program covers the core knowledge of key concepts of computer science as well as offers flexibility to pursue specializing in various fields of interests.
- A **track in Data Science in Biomedicine** is offered as a MS thesis option. Students who choose this track will adopt biomedical applications of data science to learn data science methodologies and technologies.
- The graduate certificate in software engineering is designed for working professionals, or computer science students beginning their careers, who are in the field of software engineering and/or software development.
- The graduate certificate in cybersecurity & defense is designed for working professionals in the field of computer science, network and/or security operations. The certificate program in Cyber Security and Defense will prepare Computer Science professionals to identify, analyze, and mitigate technical cybersecurity related vulnerabilities, exploits and attacks against network and critical cyber infrastructure.
- The Computer Science and Information Systems PhD is awarded from the College of Engineering, Design and Computing. The CSIS PhD program is an interdisciplinary, joint program between the Department of Computer Science and Engineering and the Information Systems program in the Business School.
- The multidisciplinary engineering, design and computing PhD degree is available through the Department of Computer Science and Engineering.

Most up-to-date information on all programs offered through the Computer Science and Engineering Department can be obtained from the department's website at: [engineering.ucdenver.edu/cse](http://engineering.ucdenver.edu/cse).

## Graduate Programs

The Department of Computer Science and Engineering (CSE) offers a master of science in computer science. The CSE department also offers a doctoral degree in computer science and information systems. In addition, the engineering and applied science doctor of philosophy degree is available through the CSE department.

Expertise expand several areas of research including algorithms, artificial intelligence, big data management & mining, cloud computing, computer architectures, computer graphics, computer networks, computer security, cyber-physical systems, cyber security

& defense, data science, database systems, distributed computing, graph theory, high-performance computing, Internet, machine learning, mobile computing, operating systems, parallel and distributed systems, software engineering and virtual reality.

Requests for applications for graduate study in computer science and engineering should be addressed to:

Graduate School  
Campus Box 163  
P.O. Box 173364  
Denver, CO 80217-3364

COURIER ADDRESS (UPS, FEDEX, etc.):  
Graduate School  
1380 Lawrence Street, Suite 1251  
Denver, CO 80204

Contact Email: [CEASGApplications@ucdenver.edu](mailto:CEASGApplications@ucdenver.edu)  
Phone: 303-315-2179

All applicants for admission must submit complete credentials as outlined in the instructions that accompany the application materials.

## **Master of Science (MS) in Computer Science**

### **Admission Requirements**

Applicants should hold a bachelor's degree from an institution comparable to the University of Colorado. They need to have sufficient programming experience and mathematical maturity to understand advanced courses. Qualified applicants holding a degree outside computer science or equivalent fields may need to take additional foundational undergraduate courses before starting the graduate program.

Admission decisions are based on prior academic performance, letters of recommendation, English proficiency, if applicable, as well as the applicant's written statement of purpose.

Additional requirements include:

- (1) 10 credit hours, on the semester basis, of university-level calculus
- (2) at least one math course beyond calculus, such as advanced calculus, differential equations, linear algebra, probability, statistics or combinatorial analysis.

Students lacking some of these requirements, whose background is otherwise satisfactory, may be admitted with the understanding that the certain undergraduate courses have to be completed after admission. Additional information regarding the admissions process may be found at [engineering.ucdenver.edu/cse](http://engineering.ucdenver.edu/cse).

### **Required GPA**

Regular admission: Applicants should have an undergraduate GPA of at least 3.0.

### **Transfer Credit**

A maximum of 9 semester hours of graduate course work may be transferred into the program based on department approval. In principle, core courses must be taken from the CSE department at CU Denver.

Note: Candidates applying for MS study will be individually evaluated by the department's graduate committee. A letter with a decision will be sent to the applicant by the graduate committee chair.

## **Computer Science and Information Systems (CSIS) PhD**

### **Admission**

The Computer Science and Information Systems PhD Computer Science track is awarded from the College of Engineering, Design and Computing. Students interested in the information systems track are referred to CU Denver Business School CSIS PhD program. The CSIS PhD degree is an interdisciplinary program designed to provide an infrastructure for a wide spectrum of research possibilities in the computer science and information systems field by emphasizing the scientific, algorithmic, system design and computing aspects of the field.

Admission criteria include GPA (undergraduate and graduate), standardized test scores (GRE), letters of recommendation, prior achievements in academia and industry and an application portfolio essay describing an applicant's motivation and an initial plan for doctoral study. The application portfolio is important to gauge an applicant's motivation for research training.

Exceptionally motivated students with BS degrees in computer science, information systems, or closely related fields may apply to the CSIS PhD program directly. Students without a master's degree must complete at least 30 hours of CSIS PhD required course work in addition to the 30 hours of dissertation.

### **Supervision of the PhD Program**

The PhD program is supervised by the two program co-directors. The duties of the co-directors include scheduling of doctoral courses, setting program policies subject to approval of business and CSE faculty, working with advisors to ensure compliance with the program guidelines, resolving disputes, measuring performance of the program over time and providing the final decision on admittance of students.

### **Advisor**

Upon entering the program, each chooses an advisor to provide mentoring and guidance throughout the program and work with the student to prepare a program of study. Requests to change advisors must be approved by the program co-directors, and this happens in very rare circumstances.

### **Program Requirements and Milestones**

For details about program requirements in the computer science track, see the CSIS PhD Handbook.

## **Engineering, Design and Computing PhD**

Graduate School Policies and Procedures apply to this program

The multidisciplinary Engineering and Applied Science Doctor of Philosophy degree program is offered by the College of Engineering, Design and Computing and consists of a primary and secondary concentration. Applicants apply and enter the program through one of four departments, called the host department, which is chosen based on the applicant's intended primary concentration of study. The four departments that serve as host departments are:

- Civil Engineering
- Computer Science and Engineering
- Electrical Engineering
- Mechanical Engineering

Each host department offers several concentrations. A list of concentrations can be found on each department's website. Go to [engineering.ucdenver.edu](http://engineering.ucdenver.edu) to learn more.

The required secondary concentration can be chosen from any remaining department within the college, including the Department of Bioengineering. The secondary concentration may also be chosen from another CU Denver school or college. A student chooses his/her secondary concentration with the help of a faculty advisor after entering the program.

## **Requirements for Admission**

Requirements for admission to the Engineering and Applied Science PhD program can be found under the Degree Programs link on each host department's website.

- Civil Engineering ([engineering.ucdenver.edu/civil](http://engineering.ucdenver.edu/civil))
- Computer Science and Engineering ([engineering.ucdenver.edu/cse](http://engineering.ucdenver.edu/cse))
- Electrical Engineering ([engineering.ucdenver.edu/electrical](http://engineering.ucdenver.edu/electrical))
- Mechanical Engineering ([engineering.ucdenver.edu/mechanical](http://engineering.ucdenver.edu/mechanical))

## **Degree Requirements**

The minimum degree requirements consist of 30 semester hours of course work in the primary and secondary areas of concentration, as well as 30 semester hours of research/dissertation credit. Each candidate for the degree is expected to take a preliminary examination by the end of the second year. After successful completion of this exam, the student is required to take the comprehensive examination and the doctoral dissertation defense examination. Additional requirements are outlined in the Rules and Regulations document that each student signs after being admitted to the

program. Each student must also satisfy the degree requirements of the CU Denver Graduate School.

### **Program Requirements and Milestones**

For details about program requirements in the computer science track, see the CSIS PhD Handbook.

# **ELECTRICAL ENGINEERING**

**Chair:** Stephen D. Gedney

**Program Manager:** Annie Bennett

**Administrative Assistant:** Karla Flores

**Office:** North Classroom, 2615

**Telephone:** 303-315-7520

**Website:** [engineering.ucdenver.edu/electrical](http://engineering.ucdenver.edu/electrical)

## **Faculty**

### **Professors**

Hamid Fardi, PhD, University of Colorado Boulder

Stephen Gedney, PhD, University of Illinois at Urbana-Champaign

Mark Golkowski, PhD, Stanford University

Miloje Radenkovic, PhD, University of Belgrade, Yugoslavia

### **Associate Professor**

Dan Connors, PhD, University of Illinois Urbana-Champaign

Tim Chifong Lei, PhD, University of Michigan

Fernando Mancilla-David, PhD, University of Wisconsin at Madison

Jaedo Park, PhD, The Pennsylvania State University

### **Assistant Professors**

Satadru Dey, PhD, Clemson University

Vijay Harid, PhD, Stanford University

Chao Liu, PhD, Purdue University

Alireza Vahid, PhD, Cornell University

## **Electrical Engineering Programs**

Modern electrical engineering is a very broad and diverse field. Never before has there been such a challenge and opportunity for electrical engineering to serve mankind.

Today's electrical engineers are involved in the development of technology, materials and products to improve the quality of life. They are concerned with the generation and transmission of power, the control and utilization of natural and synthetic resources, the communication of data and information and the intelligent use of computers in consumer as well as industrial products and processes. Systems in electrical

engineering range in size from microprocessors through megawatt energy conversion systems to global audio and video communication networks.

## **Mission Statement**

We provide graduate programs and an ABET-accredited undergraduate program that are accessible to a diverse group of students—students of different racial and cultural backgrounds, full-time students as well as those who have considerable work and family commitments outside their academic learning and students with a wide variety of work experiences.

## **Graduate Program**

The Department of Electrical Engineering offers graduate programs with the following areas of emphasis: communications and signal processing; controls and signal processing; microelectronics and VLSI; fields, waves and optics; computer engineering and embedded systems design; and energy and power systems. The department offers graduate programs leading to the degrees of master of science in electrical engineering and master of engineering. In addition, the multidisciplinary engineering and applied science doctor of philosophy degree is available through the Department of Electrical Engineering.

## **Requirements for Admission**

Additional admissions information, including links to the online application, is available on the college website.

The minimum requirements for “regular” admission to the master’s program are: BS in electrical engineering, or equivalent degree in math, physics or other engineering disciplines, from a reputable institution, with a GPA of at least 3.0, on a 4.0 scale. Satisfaction of minimum requirements does not guarantee admission: The grades obtained in the student’s area of concentration are important factors in the consideration, and so are possible multiple repetitions of fundamental courses. Students who do not meet the requirements for direct admission to the program may be admitted “conditionally”: that is, they may be required to take or repeat certain undergraduate courses before their admission to the program is official.

For those undergraduate students with degrees in science and non-electrical engineering wishing to pursue graduate study in the electrical engineering department, there is no restriction or constraint in being admitted into the master of science in electrical engineering graduate program. However, they must fulfill any prerequisite course requirements assigned to any graduate course in the department. Students with an undergraduate degree in areas other than electrical engineering must receive approval from their graduate advisor before registering for a class in electrical engineering. All students must plan a program of study in consultation with their departmental advisor(s), during the first semester of study, and submit for approval to the department.



Applicants must submit evidence of adequate preparation for graduate study by either (a) submitting official GRE scores, or (b) documenting an earned bachelor's degree with a GPA of 3.00 or higher from an institution accredited by a U.S. accreditation body, or an earned master's degree with a GPA of 3.50 or higher from an institution accredited by a U.S. accreditation body.

All applications must be submitted online. Send all supporting application materials to the Graduate School at the following address:

**MAILING ADDRESS:**

Graduate School  
Campus Box 163  
P.O. Box 173364  
Denver, CO 80217-3364

**COURIER ADDRESS (UPS, FEDEX, etc.):**

Graduate School  
1380 Lawrence Street, Suite 1251  
Denver, CO 80204

For admissions questions, contact [graduateadmissions@ucdenver.edu](mailto:graduateadmissions@ucdenver.edu) or 303-315-2179.

## **International Applicants**

More information for international applicants is available through the Office of International Admissions.

# **MECHANICAL ENGINEERING**

**Chair:** Samuel W. J. Welch

**Office:** North Classroom 2024

**Telephone:** 303-315-7500

**Fax:** 303-315-7501

**Website:** [ucdenver.edu/mechanical](http://ucdenver.edu/mechanical)

## **Faculty**

**Professor:**

Peter E. Jenkins, PhD, Purdue, MBA, Pepperdine, PE-Texas

**Associate Professors:**

R. Dana Carpenter, PhD, Stanford University

Kannan N. Premnath, PhD, Purdue University

Ronald A. L. Rorrer, PhD, Virginia Polytechnic Institute and State University, PE-Colorado

Mohsen Tadi, PhD, Virginia Polytechnic Institute and State University  
Samuel W. J. Welch, PhD, University of Colorado Boulder  
Christopher M. Yakacki, PhD, University of Colorado Boulder

**Assistant Professors:**

Kai Yu, PhD Georgia Tech

**Assistant Professor (Clinical Teaching Track):**

Maryam Darbeheshti, PhD, University of Denver

**Senior Instructor:**

Joseph F. Cullen Jr., MS, University of Colorado

**Professor Emeritus:**

James Gerdeen, PhD, Stanford University

J. Kenneth Ortega, PhD, University of Colorado Boulder

**Associate Professor Emeritus:**

B. Thomas Arnberg, MS, University of Colorado

## **Mission Statement**

The mission of the Department of Mechanical Engineering is to contribute to the economic development of the state of Colorado and the Denver metropolitan area by providing high-quality bachelor's, master's (BS, MS and MEng) and PhD programs in mechanical engineering for a diverse group of working students.

## **Program Objectives**

The programs offered by the Department of Mechanical Engineering of the University of Colorado Denver can be completed in the afternoon and evening hours to accommodate both working and traditional students. The department seeks to graduate a diverse population of students with bachelor's and master's degrees, who within a few years of graduation are able to:

- be employed by a diverse group of industries, research laboratories and educational institutions
- pursue careers in engineering, interdisciplinary areas, research and education
- pursue postgraduate education and advanced degrees

## **Graduate**

The Department of Mechanical Engineering offers graduate courses, a master of science (MS) degree program and a master of engineering (MEng) program. In addition, the multidisciplinary engineering and applied science doctor of philosophy degree is available through the Department of Mechanical Engineering. The areas of research interest in which a student may undertake studies at the Denver campus include

manufacturing processes, fluid mechanics, solid mechanics, bioengineering, energy thermodynamics and composite materials.

As a student in the MS or MEng program, you must meet with your graduate advisor before or during your first semester and design a sequence of elective courses that form a coherent program plan.

All applicants should apply online at: [www.ucdenver.edu/academics/colleges/Graduate-School/prospective/Pages/apply.aspx](http://www.ucdenver.edu/academics/colleges/Graduate-School/prospective/Pages/apply.aspx)

Inquiries about graduate study in mechanical engineering should be addressed to:

CU Denver Department of Mechanical Engineering  
Campus Box 112  
P.O. Box 173364  
Denver, CO 80217-3364

Applicants who are not citizens or permanent residents of the United States should make application through the Office of International Admissions, Campus Box 185, P.O. Box 173364, Denver, CO 80217- 3364. (See the International Students section of the catalog.) All applicants for admission must submit complete credentials as outlined in the instructions that accompany the application materials.

## **Concurrent Bachelor's/Master's Degrees**

Students wishing to obtain a BS degree with a major in mechanical engineering and either the MS or the MEng degree in mechanical engineering may do so with up to 6 semester hours of 5000-level or above courses applying to both degrees. The 5000-level courses must meet the degree requirements for the graduate degree sought and must be suitable technical electives for the undergraduate degree. This option is open only for students seeking both degrees at CU Denver. Students must meet admission requirements to be accepted into the graduate program. Completion of two 5000-level courses does not guarantee admission into the graduate program. Please see an advisor for restrictions and guidelines.

## **Engineering and Applied Science PhD Program**

The engineering and applied science doctor of philosophy program consists of studies in engineering and engineering-related disciplines. It is a multidisciplinary program in keeping with the interdisciplinary nature of modern research. The degree is conferred by the College of Engineering, Design and Computing. However, applicants to the degree program apply to and enter the program through one of four departments, called the host department, of the college. The applicant chooses his/her host department based on his/her intended primary concentration of study. The four departments of the college that serve as host departments are Civil Engineering, Computer Science and Engineering, Electrical Engineering and Mechanical Engineering. Each host department offers several concentrations. The secondary concentration can be chosen from any

remaining department of the college, including Bioengineering. The secondary concentration may also be chosen from another college/school at CU Denver. The course work in the primary and secondary areas must consist of ten courses (30 semester hours). In addition to other courses, a student must take at least five courses in his/her primary area of concentration and at least three courses in a secondary area of concentration. Other courses may be recommended by the student's advisor. Research that spans across two or more of the five college departments is strongly encouraged and is a major strength of the program.

# COLLEGE OF LIBERAL ARTS AND SCIENCES

## **CLAS Dean's Office**

North Classroom, Suite 5014  
Phone: 303-315-7000  
Fax: 303-315-7016

**Pamela Jansma**, Dean, Professor of Geography and Environmental Sciences

**Richard Allen**, Associate Dean for Teaching, Learning and Curriculum; Professor of Psychology

**Laura Argys**, Associate Dean for Research and Creative Activities; Professor of Economics

**David P. Tracer**, Associate Dean for Student Success; Professor of Health & Behavioral Sciences

**Marjorie Levine-Clark**, Associate Dean for Diversity, Outreach and Initiatives; Professor of History

**Kathleen, Bollard**, Associate Dean for Faculty and Staff Affairs; Professor of Spanish

## **Academic Advice and Information**

The College of Liberal Arts and Sciences partners with the Graduate School to assist with the administration of our graduate degrees. Graduate students in the college are expected to assume responsibility for planning their academic programs in accordance with Graduate School Rules, CLAS policies and degree program requirements. Graduate students must work with the Student Progress Coordinator in the Graduate School in addition to their faculty advisor upon matriculation into the college. The Student Progress Coordinator in the Graduate School is responsible for advising graduate students of University and Graduate School policies and procedures and for certifying that degree requirements have been met for graduation purposes.

Graduate students should meet with a faculty advisor in their department as soon as they begin their degree program. The faculty advisor is responsible for advising students about coursework and degree requirements and for certifying that program requirements are complete at graduation. Students should consult with their faculty advisor at least once a semester following admission to the program. While students are strongly encouraged to meet with their faculty advisor every semester, they *must* meet with their faculty advisor at the beginning of their last semester to verify that all degree requirements have been met and to have their candidacy form approved and signed. This must be done before the campus census date and is considered an absolute deadline.

To learn more about admissions, transfer credits, readmission, changing degree programs, graduate courses, GPA requirements, residency requirements, academic probation, incomplete grades, thesis/project/dissertation procedures and defense, research protocol, comprehensive exams, application to graduate and candidacy to graduate, deadlines and time limits, please consult with your faculty advisor and refer to the Graduate School Rules.

**Graduate School Dean's Office**

Lawrence Street Center, Suite 1251

Phone: 303-315-2183

Email: [graduate.school@ucdenver.edu](mailto:graduate.school@ucdenver.edu)

**David Engelke**, Graduate School Dean

**Inge Wefes**, Graduate School Associate Dean

**Stephanie Puello**, Graduate School Student Progress Coordinator

**Kelly Santa-Maria**, Director of Graduate Admissions

The mission of the College of Liberal Arts and Sciences is to foster academic excellence, to create and impart knowledge critical to a modern society and a global economy, and to ensure the acquisition of skills essential for professional careers and graduate study. Our vision is to enact a new paradigm for a liberal arts education that retains the proven values of a broad education while imparting research and career-oriented skills throughout the curriculum.

The College of Liberal Arts and Sciences (CLAS) offers a variety of excellent graduate programs, ranging from the highly specialized PhD in Clinical Health Psychology to the broad interdisciplinary MA in Humanities or Social Sciences. CLAS faculty members are recognized as research leaders, dedicated mentors, and engaged scholars. Bringing real-world experience and academic expertise to our classrooms, CLAS faculty are dedicated to instilling in students a lifelong love of learning and inquiry, cutting-edge research training, respect for free thinking and commitment to collaborative endeavors. Our graduate programs draw on our downtown location and make use of the city's many resources partnerships with Denver businesses and non-profit organizations. CLAS students have excellent opportunities to participate in first-class research in collaboration with faculty and the community.

## College of Liberal Arts and Sciences Educational Goals

CLAS defines liberal education as including four major components:

1. Central elements of knowledge including:
  - a. knowledge of the diversity and significant dimensions of human culture and a specific understanding of American culture, including its political and ethnic diversity;
  - b. aesthetic awareness and appreciation of the cultural contributions made to the human experience by the social sciences and humanities;
  - c. an understanding of the methods of inquiry and development of theory that form the basis of knowledge in the natural and physical sciences;
2. Essential skills for critical analysis, writing, computation, communication and decision making;
3. The development of a constructive orientation toward society through the enhancement of the individual's capacity to make informed and responsible choices based on reflective consideration of the democratic principles of due process, civil liberties and the balance between individualism and the common good;
4. The ability to apply knowledge of the arts and sciences to society's specific needs.

## Graduate Programs

Graduate degree programs offered by CLAS are listed below. Many degrees provide the opportunity for students to specialize in concentrations within the discipline; these are noted below the degree title.

### ***Master of Arts (MA)***

Anthropology

*Concentrations:* archaeological studies; biological anthropology; medical anthropology

Applied Geography and Geospatial Science

Communication

Economics

English

History

*Concentrations:* European history; global history; public history; United States history

Political Science

*Concentrations:* politics and public policy, off-campus New Directions

Sociology

Spanish

### ***Master of Humanities (MH)***

*Concentrations:* philosophy and theory; visual studies

***Master of Integrated Sciences (MIS)***

***Master of Science (MS)***

Applied Mathematics

Biology

Chemistry

*Concentrations:* biochemistry, synthesis and measurement, molecular modeling, traditional chemistry

Environmental Sciences

*Concentrations:* air quality; ecosystems; environmental health; environmental science education; geospatial analysis; hazardous waste; water quality

Health Economics

Statistics

***Master of Social Science (MSS)***

*Concentrations:* community health science; international studies; society and environment; social justice; women's and gender studies

***Doctor of Philosophy(PhD)***

Applied Mathematics

Clinical Health Psychology

Health and Behavioral Sciences

Health Economics

Integrative and Systems Biology

**Certificate Programs**

The college offers graduate certificate programs that demonstrate proficiency in a specialized field of study. Certificates may cross traditional disciplinary boundaries and may be awarded independently of formal graduation.

Certificate programs are open to degree-seeking students as well as those who aren't seeking a degree but want to enhance their professional expertise.

***Graduate Certificates***

Applied Econometrics and Data Analytics (Economics)

Applied Statistics (Mathematical and Statistical Sciences)

Digital Studies (Interdisciplinary)  
Environmental Science Education (Geography/Environmental Sciences)  
Free and Open Source Software for Geospatial Applications  
(Geography/Environmental Sciences)  
Geographic Information Science (Geography/Environmental Sciences)  
Global History (History)  
Health Economics and Outcomes Research (Economics)  
Historic Preservation (History)  
Labor Leadership (Political Science)  
Public, Nonprofit and Community Leadership (Political Science)  
Scientific Foundations of Technical Innovation (Physics)  
Strategic Communication (Communication)  
Sustainable Urban Agriculture (Geography/ Environmental Sciences)  
Teaching College-level Language and Literacy (English)  
Teaching College-level Literature and Film (English)  
Teaching English Language Learners (English)  
Women's and Gender Studies (Interdisciplinary)

## **Continuing and Professional Education (CPE)**

The College of Liberal Arts and Sciences (CLAS) participates in the University's Continuing and Professional Education (CPE) programs, which include credit courses offered through extended studies during evenings, weekends and at off-campus sites. CPE also includes non-credit courses offered for continuing education units (C.E.U.s) or for professional development and personal enrichment.

### **Programs**

#### **Certificate**

- Digital Studies Certificate

#### **Doctor of Philosophy**

- Health Economics PhD

#### **Dual Degree**



- 4+1 International Studies to Masters in Humanities or Social Sciences
- 4+1 Philosophy to Masters of Humanities
- 5 Year BA/BS and Masters in Public Health

#### **Master of Science**

- Health Economics MS

## **Anthropology**

Go to information for Anthropology.

### **Programs**

#### **Master of Arts**

- Anthropology MA

## **Chemistry**

Go to information for Chemistry.

### **Programs**

#### **Bachelor of Science/Master of Science**

- Chemistry BS/MS

#### **Master of Science**

- Chemistry MS

## **Communication**

Go to information for Communication.

### **Programs**

#### **Certificate**

- Strategic Communication Graduate Certificate

## **Master of Arts**

- Communication MA

## **Economics**

Go to information for Economics.

### **Programs**

#### **Certificate**

- Applied Econometrics and Data Analytics Graduate Certificate
- Health Economics and Outcomes Research Graduate Certificate

#### **Master of Arts**

- Economics MA
- Economics MA/Public Administration MPA Dual Degree

#### **Master of Science/Master of Arts**

- Economics MA/Applied Mathematics MS Dual Degree, with a focus in Applied

Statistics

#### **Master of Science in Finance/Master of Arts in Economics**

- Economics MA/Finance MS Dual Degree

#### **Other Programs**

- Economics BA/MA

## **English**

Go to information for English.

### **Programs**

#### **Certificate**

- Teaching College-level Language and Literacy

- Teaching College-level Literature and Film Graduate Certificate
- Teaching English Language Learners Graduate Certificate (CTELL)

### **Master of Arts**

- English MA

## **Geography and Environmental Sciences**

Go to information for Geography and Environmental Sciences.

### **Programs**

#### **Certificate**

- Environmental Science Education Graduate Certificate
- Free and Open Source Software for Geospatial Applications Graduate Certificate
- Geographic Information Science Graduate Certificate
- Sustainable Urban Agriculture Graduate Certificate

#### **Master of Arts**

- Applied Geography & Geospatial Science MA

#### **Master of Science**

- Environmental Sciences MS

## **Health and Behavioral Sciences**

Go to information for Health and Behavioral Sciences.

### **Programs**

#### **Doctor of Philosophy**

- Health and Behavioral Sciences PhD

## **History**

Go to information for History.

## **Programs**

### **Certificate**

- Global History Graduate Certificate
- Historic Preservation Graduate Certificate
- U.S. History Graduate Certificate

### **Master of Arts**

- History MA
- Public History, MA in History

## **Humanities, Master of**

Go to information for Humanities, Master of.

## **Programs**

### **Master of Humanities**

- Humanities MH

## **Integrated Sciences, Master of**

Go to information for Integrated Sciences, Master of.

## **Programs**

### **Master of Science**

- Integrated Sciences MIS

## **Integrative Biology**

Go to information for Integrative Biology.

## **Programs**

### **Doctor of Philosophy**

- Integrative and Systems Biology, PhD

### **Master of Science**

- Biology MS

## **Interdisciplinary Programs**

Go to information for Interdisciplinary Programs.

## **Mathematical and Statistical Sciences**

Go to information for Mathematical and Statistical Sciences.

### **Programs**

#### **Bachelor of Science/Master of Science**

- 5 Year Mathematics BS/Statistics MS

#### **Certificate**

- Applied Statistics Graduate Certificate

#### **Doctor of Philosophy**

- Applied Mathematics PhD

#### **Master of Science**

- Applied Mathematics MS

- Statistics MS

## **Modern Languages**

Go to information for Modern Languages.

### **Programs**

#### **Master of Arts**

- Spanish MA

## **Physics**

Go to information for Physics.

## **Programs**

### **Certificate**

- Scientific Foundations of Technical Innovation Certificate

## **Political Science**

Go to information for Political Science.

## **Programs**

### **Certificate**

- Labor Leadership Certificate
- Public, Nonprofit and Community Leadership Graduate Certificate

### **Dual Degree**

- 4+1 International Studies BA to Political Science MA
- 4+1 Political Science BA to MA

### **Master of Arts**

- New Directions in Public, Non-Profit and Community Leadership, Political Science MA
- Political Science MA
- Political Science MA / Master of Business Administration (MBA) Dual Degree

## **Psychology**

Go to information for Psychology.

## **Programs**

### **Doctor of Philosophy**

- Psychology, Clinical Health Psychology PhD

## **Social Science, Master of**

Go to information for Social Science, Master of.

### **Programs**

#### **Master of Social Science**

- Social Science MSS

## **Sociology**

Go to information for Sociology.

### **Programs**

#### **Dual Degree**

- 4+1 Sociology BA to MA

#### **Master of Arts**

- Sociology MA

## **Women's and Gender Studies**

Go to information for Women's and Gender Studies.

### **Programs**

#### **Certificate**

- Women's and Gender Studies Graduate Certificate

# **ANTHROPOLOGY**

**Chair:** Tammy Stone

**Program Assistant:** Connie Turner

**Office:** North Classroom Building 4002

**Undergraduate Advisor:** Tiffany Terneny

**Graduate Director:** Sarah Horton

**Telephone:** 303-315-7328

**Fax:** 303-315-7336

**Website:** [clas.ucdenver.edu/anthropology/](http://clas.ucdenver.edu/anthropology/)

## **Faculty**

### **Professors:**

Tammy Stone, PhD, Arizona State University

David Tracer, PhD, University of Michigan

### **Associate Professors:**

Marty Otañez, PhD, University of California-Irvine

Sarah Horton, PhD, University of New Mexico

Charles Musiba, PhD, University of Chicago

Christopher Beekman, PhD, Vanderbilt University

### **Assistant Professors:**

Jamie Hodgkins, PhD, Arizona State University

Christine Sargent, PhD, University of Michigan

Anna Warrener, Washington University St. Louis

### **Emeritus:**

John Brett, PhD, University of California, San Francisco and Berkeley

### **Instructor:**

Tiffany Terneny, PhD, University of Texas-Austin

### **Adjunct Faculty and Affiliated Faculty:**

Sharon Devine, PhD, University of Colorado

Jean Scandlyn, PhD, Columbia University

Caley Orr, PhD, Arizona State University

## **Graduate Program**

- ▶ Graduate School Policies and Procedures apply to this program

The unique intellectual challenge of anthropology is to integrate knowledge from many disciplines for a global understanding of cultural and biological diversity in the past and the present. Individual courses in cultural and biological anthropology and archaeology cut across lines of the humanities and social and natural sciences. Because of this integrative perspective on the human condition-and the training provided in objectively assessing cultural patterning and social interaction-anthropology graduates have a strong and versatile base for careers in a variety of fields. Graduates of our program get jobs as professional archaeologists; work in international NGOs as researchers in the health sciences and public health, as college teachers and in international development; while others have been very competitive in prestigious PhD programs (e.g., Berkeley, Pennsylvania, McMasters, Oxford, Stanford).



## Specialties and Tracks

CU Denver's Department of Anthropology provides an outstanding graduate education in anthropology, giving students a broad yet thorough grounding in the three major subfields of anthropology, as well as specialized instruction in one or more research orientations in which department faculty have substantial expertise. The graduate faculty in anthropology are particularly known for their research and publications in medical anthropology; immigrant health and immigration; disability; maternal and child health; human growth and development; human evolution; modern human variation; human locomotion; experimental economics; visual anthropology; ethnicity and identity; political economy; Southwestern, Mexican and Neanderthal archaeology; paleoenvironment; and urban and community anthropology. Across the specializations there is a strong emphasis on research design and methodology, providing students concrete job-related skills. Area studies emphases include Latin America, East Africa, the Mediterranean, and the US Southwest. Students also have opportunities to study abroad, to participate in one of several field schools, and to gain international research experience.

## Topical Concentrations

- Medical Anthropology
- Archaeology
- Biological Anthropology

Click [here](#) to learn about the **Anthropology MA Plans of Study**.

The graduate program in Anthropology is an active participant in the Western Interstate Commission for Higher Education's Western Regional Graduate Program ([www.WICHE.edu](http://www.WICHE.edu)). Students from WICHE states (Alaska, Arizona, California, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington and Wyoming) pay in-state tuition while maintaining residency in their home state. Just indicate in your application packet that you wish to take advantage of this program.

## Application Process

Application is open to holders of a BA, BS or higher degree in any field. We welcome applications from individuals pursuing particular interests and careers, especially those related to one of the areas of concentration noted above. The departmental deadline for receipt of all application materials is **February 15** for admission the following fall.

Acceptance to the program is competitive and based on the application as a whole rather than preference in any one area:

- an undergraduate record of good quality (3.0 GPA or higher for all undergraduate studies)
- prior training in Anthropology\*
- GRE scores (verbal, analytic and quantitative)

- three letters of recommendation
- a statement of the applicant's goals, both in graduate school and in their career, after completing the degree
- One copy of transcripts from all undergraduate/graduate institutions attended

If you have no prior anthropology training, we encourage you to gain the necessary background as a non-degree student before applying to the graduate program.

\*Students may be admitted without prior anthropology training, but may be required to make up deficiencies without graduate credit during the course of their graduate study.

## **Financial Aid**

The department offers limited tuition assistance, teaching assistantships and research assistantships for graduate students on a semester-by-semester basis. Appointment is competitive and is typically based on a student's academic credentials, GRE scores and preparation in anthropology. Contact the department for details. For information on grants, federal work-study programs, scholarships and loans, contact the CU Denver Financial Aid Office (website: [www.ucdenver.edu/student-services/resources/CostsAndFinancing/FA/Pages/FinancialAid.aspx](http://www.ucdenver.edu/student-services/resources/CostsAndFinancing/FA/Pages/FinancialAid.aspx)).

## **Programs**

### **Master of Arts**

# **ANTHROPOLOGY MA**

► Graduate School Policies and Procedures apply to this program.

## **Plans of Study**

The unique intellectual challenge of anthropology is to integrate knowledge from many disciplines for a global understanding of cultural and biological diversity in the past and the present. Individual courses in cultural anthropology, biological anthropology and archaeology cut across lines of the humanities, social sciences and natural sciences. Because of this integrative perspective on the human condition, and the training provided in objectively assessing cultural patterning and social interaction, an advanced degree in anthropology provides a versatile base for career development.

Students in our terminal Master's program have the benefit of receiving the faculty's full attention. Our program is unique in several respects. First, for students wishing to find employment after their MA, the department offers a mentorship program that pairs them with alumni who have forged careers in students' fields of interest. Second, our program also offers students a range of opportunities for professional development that are unusual in programs that focus on PhD students. For students considering the possibility of doctoral-level work in anthropology, the department has an excellent

record in placing students in top-tier graduate programs. Students with residency in 14 states are eligible for in-state tuition, and funding opportunities in the form of Teaching Assistantships and graduate fellowships are available to students on a competitive basis.

The University of Colorado Denver Department of Anthropology provides outstanding graduate education in anthropology, giving students a broad yet thorough grounding in the four subfields of anthropology as well as specialized instruction in one or more of a number of research orientations and/or geographic area concentrations. These orientations encompass the areas of research and application in which department faculty have substantial expertise.

These degree requirements are subject to periodic revision by the academic department, and the College reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their major advisor and CLAS advisor to confirm the best plans of study before finalizing them.

MA students may pursue the thesis or non-thesis option.

- **Thesis Option:** A thesis is characterized by three factors: 1) it is based in a research question or problem; 2) it involves original research; 3) there is a fully developed research proposal. A thesis can also encompass a range of format alternatives to the traditional thesis (e.g. article submitted for publication to a peer-reviewed journal, or a video production, internship or museum exhibit, each generally accompanied by a companion paper developing a theoretical or problem-oriented question). The thesis option requires 30 semester hours, including 4-6 hours of thesis.
- **Non-Thesis Option:** This track is defined by additional course work in lieu of a thesis. The non-thesis option requires 36 semester hours of course work.

## Thesis Option

The thesis is a major requirement for those in the MA in anthropology thesis track. The thesis should demonstrate the student's ability to apply knowledge and skills gained from the anthropology department's curriculum. A desirable goal for an excellent thesis would be a work of sufficient rigor and quality that it could be considered for publication. Original data collection ("fieldwork") is recommended but not required for the thesis. Analysis of secondary data-whether quantitative, qualitative, visual or other formats-is perfectly acceptable as long as the research is informed by a clearly articulated research question and under-girded by a research proposal.

The traditional thesis is a single document that often incorporates a literature review, definition of a problem, discussion of methods to address the problem, the subsequent research activity and results. However, the student may design a thesis with different emphases, in consultation with their advisor. For example, the goal may instead be a

more compact paper submitted to a peer-reviewed journal. Other thesis plans may combine some research activity such as a video production, museum exhibit or an internship, with an accompanying paper. Students pursuing the thesis option must develop a topic and research proposal that specifies their plans in the semester after their completion of 18 credit hours.

The thesis must be defended before a committee of three faculty, at least two of whom need to be on the Department of Anthropology faculty (which includes senior instructors and research faculty). The structure of the thesis is largely determined by the Graduate School Policies and Procedures ; i.e., a thesis must conform to the rules.

1. For the thesis, students must prepare a full research proposal which must be approved by their thesis chair before beginning their research. This proposal must be completed by the semester after the student has completed 18 credit hours. Sections of the proposal should include, at a minimum:

- a) Introduction and statement of the problem: Should include a one sentence statement of the problem on the first page, and a discussion of its significance (i.e., why is it important that this topic be researched).
- b) Literature review covering theoretical and topical material.
- c) Research design and methods including a data analysis plan.

*Note:* Wenner-Gren and National Science Foundation both provide good models and templates for the research proposal. Those in the medical anthropology track might want to consider following the NIH model, depending the nature of their research questions and career goals.

2. All students proposing to work with humans or data on modern humans must apply for and receive approval from the Human Subjects Research Committee before they begin their research. Note: most of the material for the application will be drawn from the research proposal.
3. The draft thesis must be reviewed and approved as “defensible” by the student’s thesis committee faculty chair before a thesis defense date can be set. Defensible means the chair has reviewed the draft and suggested changes have been made.
  - a) The draft sent to the student’s committee must be substantively complete: All references must be in the text and properly formatted in a references cited section; there should be no “track changes” comments in the text; the text should be formatted according to Graduate School requirements.
  - b) Given the complexity of faculty and student schedules, consultation on a defense date should be done as far in advance as possible.
  - c) There must be a minimum of three weeks between the agreed-upon date for the defense and distribution of the draft thesis defined as defensible by the student’s chair. If you would like feedback from your committee members before the defense, you should plan to distribute the thesis at least 4 weeks before the defense date.

*Note:* If you intend to graduate the same semester you defend your thesis, you must schedule, successfully defend, and complete all recommended changes in accordance with CU Denver thesis and dissertation guidelines. This effectively translates to having the thesis completed and “defensible” before the middle of the semester.

## **Non-Thesis Option**

The non-thesis option allows students to pursue their own educational goals through the selection of additional courses that fit their interests. We strongly encourage students who choose this option to consider an internship position arranged around an area of expertise or the development of a skill-set. The internship may be in a governmental agency or non-governmental organization in Colorado, the U.S. or internationally. Successful completion of an internship will be acknowledged on the transcript of the MA program. The decision to pursue the non-thesis option should be made by the semester following the completion of 18 credit hours.

### **Additional Information**

Students must maintain an overall GPA of 3.0 to remain in good standing and receive a grade of *B-* or better in a course to have it count toward graduation. The Graduate School on the Downtown Campus allows up to five years to complete a master’s degree, but students are strongly discouraged from spending more than four years. While it is possible to finish the MA in two years, most of our students work part-time, which limits the time they can dedicate to the program; most finish within three years. Four semesters must be taken in residence at CU Denver. All students are required to pass a written comprehensive examination, taken after core course work has been completed.

Some students may benefit from adding a specific skills-based certificate program onto their graduate program. For example: archeology students may wish to gain expertise in Geographic Information Systems through the GIS certificate offered through the Department of Geography and Environmental Sciences, while medical anthropology students may benefit from the certificate in public health offered through the School of Public Health. Graduate-level courses in certificate programs can often fulfill elective requirements in the anthropology program.

One doctoral program at the CU Denver campus that may be of particular interest to graduates of the anthropology MA program is the PhD in Health and Behavioral Sciences . It is highly interdisciplinary and a natural extension of a master’s degree in medical anthropology.

## **Course Requirements**

Your graduate anthropology education begins by taking ANTH 5810, Integrating Anthropology, plus two core courses each from two subdisciplines of Anthropology.

After completing this core, you will select from among the specialized elective courses in the research concentrations described in more detail below. You will work closely with an advisor in selecting the range of courses appropriate both to a problem orientation and to your career objectives.

## **Required core courses (18 semester hours)**

**Required in fall of first year:**

- ANTH 5810 - Integrating Anthropology

**All students must complete or demonstrate competence in the following:**

- ANTH 5053 - Quantitative Methods in Anthropology

**Choose two of the following three sets of core courses (Students are not required to take these courses sequentially)**

### **Archaeology**

- ANTH 6307 - Contemporary Perspectives in Archaeology
- ANTH 6317 - Archaeological Research Design and Analysis

### **Biological**

- ANTH 6503 - Biological Anthropology Core: The Fossil Record
- ANTH 6513 - Biological Anthropology Core: Modern Human Variation

### **Cultural**

- ANTH 6063 - Qualitative Research Design and Methods
- ANTH 6103 - Current Theory in Ethnography

## **Research Concentrations (8-18 semester hours)**

You will round out your program by selecting from the diverse range of courses offered in the department according to your particular interests in anthropology, your career goals and your plans for future graduate study. You may take courses in one or more concentrations. The courses listed are suggestions only; you must work closely with your advisor in constructing your particular program of study.

## **MEDICAL ANTHROPOLOGY**

Our MA program in cultural anthropology offers a unique focus on Medical Anthropology. Medical anthropology is a subdiscipline of anthropology that includes the

study of all aspects of health, illness and disease in human communities and populations. It draws on all of the perspectives that distinguish anthropology as a unique discipline: the analysis of human evolution and adaptation; cultural development, expressions, and variability; and historical change and continuity. Medical anthropology takes as its subject a broad range of specific topics, including the study of health care systems, factors that affect the distribution and determinants of disease in populations, maternal and child health, nutrition and food habits, human development, political ecology, health policy, health disparities, community-driven wellness practices, visual storytelling, social media designed to promote health equities, and language and communication in health care contexts.

Faculty members take a variety of theoretical approaches to the topic, but our program is distinguished by its applied and engaged perspectives. A particular strength of our program is its integration of theoretical knowledge with community- and field-based training opportunities and challenges. We prepare students for careers in nonprofit and community groups, non-governmental organizations, advocacy, public health, health care institutions, and health sciences research; our graduates also attend doctoral programs at selective institutions. Courses in the department are complemented by electives in other departments (sociology, biology, psychology, history, geography, political science) and programs on the CU Denver campus (public affairs, education, health administration) and at the Anschutz Medical Campus (Schools of Medicine, Public Health, Pharmacy and Nursing).

## **Courses**

As part of the MA degree, students may take between 6 and 18 credits of electives in this track, choosing from:

- ANTH 5000 - Special Topics in Anthropology
- ANTH 5014 - Medical Anthropology: Global Health
- ANTH 5040 - Anthropology of Food and Nutrition
- ANTH 5060 - Evolutionary Medicine
- ANTH 5080 - Global Health Practice
- ANTH 5090 - Drug Syndemic
- ANTH 5150 - Human Biocultural Adaptability
- ANTH 5180 - The Nature of Power
- ANTH 5290 - Anthropology and Public Health
- ANTH 5300 - Migrant Health
- ANTH 5350 - Anthropology of Globalization
- ANTH 5450 - Development and Conservation: Contemporary Issues
- ANTH 5460 - Development and Conservation: Theory and Practice
- ANTH 5600 - Medical Anthropology
- ANTH 5800 - Special Topics in Medical Anthropology
- ANTH 5200 - Gender in Cross-Cultural Perspective

Note: Students are encouraged to take elective courses in GIS mapping (geography), ecology (biology/anthropology), public policy, public health, epidemiology and biostatistics as it is relevant to their course of study.

## **ARCHAEOLOGY**

The archaeological studies program concentrates on the study of past human societies using archaeological data collected in field and museum settings. While a quantitative and scientific approach is emphasized, the theoretical perspectives employed draw heavily from political economy and cultural ecology. The department offers a variety of theoretical, methodological and area courses, which may be supplemented by others in the geography and environmental sciences and history departments. Internships are available in local museums and historic preservation offices in the Denver metropolitan area.

### **Courses**

- ANTH 5320 - Archaeology of Mexico and Central America
- ANTH 5330 - Lithic Analysis
- ANTH 5380 - Archaeology of Hunters-Gatherers
- ANTH 5400 - Archaeology of Power and Inequality
- ANTH 5570 - Landscape Archaeology
- ANTH 5580 - Neanderthals and the Origin of Modern Humans
- ANTH 5910 - Field Experience in Archaeology
- GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing
- GEOG 5080 - Introduction to GIS
- GEOG 5220 - Environmental Impact Assessment
- HIST 5231 - History in Museums
- HIST 5232 - Historic Preservation
- HIST 5234 - Introduction to Public History

## **BIOLOGICAL ANTHROPOLOGY**

The biological anthropology concentration is concerned with modern human biological diversity and the past evolutionary history that has led to such diversity. Students in this concentration develop a firm understanding of the evolutionary processes that lead to physical and behavioral variation in humans and nonhuman primates. The concentration also emphasizes the theoretical and quantitative methods used to explore and explain this variation. Students may take courses in diverse areas including evolutionary biology, genetics, ecology, ethnobiology, epidemiology, nutrition, medical anthropology, paleoanthropology, paleontology and primatology. Because biological anthropology is multidisciplinary in nature, students are encouraged to consider courses offered outside the department.

### **Courses**



- ANTH 5014 - Medical Anthropology: Global Health
- ANTH 5030 - Ethnobiology
- ANTH 5040 - Anthropology of Food and Nutrition
- ANTH 5060 - Evolutionary Medicine
- ANTH 5150 - Human Biocultural Adaptability
- ANTH 5500 - Advanced Issues in Human Evolution
- ANTH 5530 - Anthropological Genetics
- ANTH 5550 - Primate Comparative Anatomy
- ANTH 5560 - Human Ecology
- ANTH 5580 - Neanderthals and the Origin of Modern Humans
- ANTH 5640 - Darwinian Approach to Human Behavior
- BIOL 5074 - Human Reproductive Biology
- BIOL 5134 - Human Genetics
- BIOL 5494 - Population and Evolutionary Genetics
- HBSC 7031 - Human Ecology and Environmental Adaptation
- HBSC 7310 - Environmental Epidemiology

## **DEGREE TOTAL HOURS**

**Thesis Option: 30 Hours (including 4-6 hours of thesis)**

**Non-Thesis Option: 36 Hours**

# CHEMISTRY

**Chair:** Haobin Wang

**Office:** Science Building, 3071E

**Telephone:** 303-315-7634

**Fax:** 303-315-7633

**Website:** [clas.ucdenver.edu/chemistry/](http://clas.ucdenver.edu/chemistry/)

## **Faculty**

### **Professors:**

Robert Damrauer, PhD, Massachusetts Institute of Technology

David Engelke, PhD, Washington University (St. Louis)

Doris Kimbrough, PhD, Cornell University

Hai Lin, PhD, University of Science and Technology of China

Scott Reed, PhD, University of Oregon

Haobin Wang, PhD, Wayne State University

Xiaotai Wang, PhD, University of Virginia

**Associate Professors:**

Jefferson Knight, PhD, Yale University

Yong Liu, PhD, University of Michigan

Xiaojun Ren, PhD, Jilin University

Marino Resendiz, PhD, University of California, Los Angeles

Liliya Vugmeyster, PhD, State University of New York at Stony Brook

**Assistant Professors:**

John (Nick) Fisk, PhD, University of Wisconsin, Madison

Emilie Guidez, PhD, Iowa State University

Jung-Jae Lee, PhD, University of Notre Dame

**Clinical Associate Professor:**

Margaret Bruehl, PhD, Northwestern University

Marta Maron, PhD, University of Colorado

**Senior Instructor:**

Priscilla Burrow Crocker, PhD, University of Colorado

**Instructors:**

Vanessa Fishback, PhD, University of Northern Colorado

Kyoung Kim, PhD, University of Notre Dame

Chemistry is the study of matter and its transformations, from the smallest scale - atoms and subatomic particles - to the macromolecules that provide structure and function to living organisms. Chemistry is often called the “central science” because it touches on other STEM disciplines including physics, biology, medicine, environmental science, geology, mathematics, materials science, technology, and many others. A degree in Chemistry can prepare you for a wide range of meaningful careers discovering and applying scientific knowledge. Modern chemistry combines computer modeling and experimental observation using procedures that are much safer and more environment-friendly than in past generations. Learning chemistry also teaches you important critical thinking skills that can be valuable in any career. Students with MS degrees have job opportunities in research and technical laboratory services. In addition, flexible programs can be designed to combine chemical knowledge and skills with other interests of the MS-level student (i.e. biology or environmental science).

## Graduate Program

The MS degree offered at CU Denver is a broad-based chemistry degree that allows students to take courses and do research in the following basic fields: analytical, biochemistry, inorganic, organic, physical or environmental chemistry.

The MS program is available to both full- and part-time students. The chemistry faculty strives to ensure that students receive excellent advising and supervision of work. Students enrolled in the program have an opportunity to be appointed as laboratory teaching assistants. Research activities on the part of the chemistry faculty provide opportunities for graduate students to obtain research assistantships.

Click here to learn about the **Chemistry MS** program.  
Click here to learn about the **Chemistry BS/MS** program.

## **Programs**

### **Bachelor of Science/Master of Science**

# CHEMISTRY BS/MS

While students are completing a BS degree in chemistry or biochemistry, they may also complete some of the requirements for an MS degree in chemistry by participating in the BS/MS program, using the following guidelines:

- The student must apply and be accepted for participation in the BS/MS program prior to completion of the BS degree in consultation with both the undergraduate and graduate advisors.
- Up to 12 semester hours of graduate-level course work may be taken as an undergraduate and applied toward the MS degree. This course work may not be applied toward the BS degree or ACS certification requirements for the BS degree.
- In addition, up to 3 semester hours of directed research may be applied toward the graduate degree if that research is expanded and continued for a portion of the master's thesis research. This requires the approval of the student's graduate research advisor in chemistry, and the chemistry graduate program director.
- The chemistry department will waive the requirement for placement examinations in each area of chemistry for which the student has completed the undergraduate sequence of courses and laboratories at the Downtown Campus with grades of B (3.0) or better for each course.
- The student must apply for and be admitted to the MS program in chemistry beginning the semester immediately following completion of the BS degree in chemistry at the Downtown Campus.

The BS/MS program allows undergraduate students who have begun their research as undergraduates to complete up to 12 semester hours (with approval of the graduate dean) toward the 30 semester hours required for a Plan I MS degree in chemistry while they are still completing their BS degree. This makes it possible for students to complete an MS degree in chemistry in only one year beyond the BS degree in chemistry. Students entering the MS program through the BS/MS program option must fulfill all of the requirements of the Plan I or Plan II MS degree programs.

### **Master of Science**

# CHEMISTRY MS

- ▶ Graduate School Rules apply to this program

**Program Director:** Scott Reed

**Email:** Scott.Reed@ucdenver.edu

**Office:** SI 4131

**Phone:** 303-315-7644

The MS program in chemistry focuses on providing students with the skills and knowledge necessary to conduct specialized research in preparation for careers in chemistry and related disciplines. Completing an MS in Chemistry at CU Denver can provide valuable experience that can help students land a job in the pharmaceutical, biotechnological, or other industry or can serve as a stepping stone for admission to a competitive PhD or health sciences program. Our faculty serve as mentors and advisors and assist students on the path to a more satisfying career in science. Prospective students are encouraged to contact the Graduate Program Director visit the Department of Chemistry website for additional details concerning the chemistry program, admission procedures, financial assistance and faculty research interests.

### **Admission Requirements:**

Applicants must meet the Downtown Campus Graduate School admission requirements according to Graduate School Policies and Procedures in addition to the following requirements of the Department of Chemistry:

An undergraduate major in Chemistry or a closely related discipline is required, including two semesters of organic chemistry as well as training in analytical chemistry, physical chemistry, and inorganic chemistry. Students missing more than one of these courses may be limited in the tracks that they are eligible to select. Students missing more than one of these courses may be provided a provisional admission. An undergraduate GPA of 3.0 (on a 4 point scale) is desired although each application is considered on its own merits.

- The GRE examination is recommended but not required.
- International students have additional admission requirements concerning immigration status, proof of financial responsibility and acceptable TOEFL or IELTS scores or completion of the CU Denver English as a Second Language Academy.
- Students currently in a BS program at CU Denver or elsewhere may want to consider the Chemistry BS/MS. This option includes the opportunity to enroll in graduate classes before enrolling in the MS program at CU Denver. At least 20 credits must be earned on campus. However, for the remaining courses, enrollment through CU ONLINE or on one of the other CU campuses is possible. Furthermore, the Chemistry Master's Program accepts transfer credits from accredited Universities with approval from the Graduate Program Director.

**In addition to selecting Plan I or Plan II, all MS students must select a track for their degree**

- Students interested in specializing within Chemistry must select from one of the tracks listed below. Each track has separate placement examinations. Therefore switching between tracks requires approval from the graduate program director

**Study Plans:**

<p><b>Plan I:</b></p> <p>Plan I (Thesis) is a research oriented program involving a minimum of 30 semester hours with the following requirements:</p>	<p><b>Plan II:</b></p> <p>Plan II (Course Work) is a coursework oriented program involving a minimum of 30 semester hours with the following requirements:</p>
<p>Students interested in specializing within Chemistry must select from one of the tracks listed below. Each track has separate placement examinations. Therefore switching between tracks requires approval from the Graduate Program Director</p>	
<p><b>Tracks:</b></p> <p>Track 1: Biochemistry</p> <p>Track 2: Synthesis and Measurement</p> <p>Track 3: Molecular Modeling</p> <p>Track 4: Traditional Chemistry</p>	

## Completing an MS in Chemistry - Graduation Requirements

**All Chemistry MS students must meet the following requirements for graduation:**

- A cumulative GPA of 3.0 or better at the time of graduation
- A grade of B- (2.7) or better in all courses to be counted toward the degree.
- Compliance with all Graduate School Policies and Procedures
- Every student must select a thesis or non-thesis plan. As most of the requirements overlap, a student may switch between these plans with permission from the Graduate Program Director.
- Although degrees can be completed in as little as one year, all work must be completed within five years after enrolling in the first graduate class in the department unless an exception is granted by the program director.
- Students are eligible to apply for a research assistantship or a teaching assistantship positions. Students who are interested in improving teaching skills can enroll in CHEM 5655 Teaching Assistant Bootcamp. This course is required for all students who are interested in working as a teaching assistant in the department.

- A minimum of 20 semester hours must be earned in formal lecture courses in the Department of Chemistry. Other credits can be acquired through research, internships, thesis work, independent study, transfer credits, etc.

**Plan I (Thesis) is a research oriented program involving a minimum of 30 semester hours with the following requirements:**

- An acceptable formal thesis consistent with the Graduate School Policies and Procedures
- Successful oral defense of the master's thesis before a committee of at least three Regular Graduate Faculty, two of whom must be tenure track faculty members and have an appointment with the Graduate School through the Department of Chemistry.
- Completion of a high quality research project suitable for publication in a peer-reviewed journal.
- 3 semester hours of CHEM 6950 - Master's Thesis
- All thesis students must complete 1 credit of CHEM 5610 - Understanding & Presenting Chemical Research no later than the semester before they defend their thesis.

**Plan II (Course Work) is a coursework oriented program involving a minimum of 30 semester hours with the following requirements:**

- All Plan II students are required to take a final written examination about primary research articles in their discipline. This exam may be taken any semester after 20 semester hours of graduate course work have been completed. Students may attempt the exam once per semester a maximum of three times and must be registered during the semester that they attempt the final examination.
- All non-thesis students are encouraged to take 1 credit of CHEM 5610 - Understanding & Presenting Chemical Research
- Plan II students may arrange for an internship at a local company that employs Chemists and take up to 6 credits of CHEM 5939 - Internship Students must be in good academic standing and have completed 6 graduate semester hours at CU Denver before starting an internship. Approval of the graduate program director is required prior to selecting an internship and enrolling for credit.

**Track Options:**

**Track 1: Biochemistry**

Understanding of biochemical principles governing metabolic diseases, cancer and neurodegenerative diseases.

Take the following required course:

- CHEM 5810 - Graduate Biochemistry I

Take **one** of the following required courses:

- CHEM 5310 - Advanced Organic Chemistry
- CHEM 5530 - Advanced Physical Chemistry

Take **two** of the following elective courses:

- CHEM 5815 - Structural Biology of Neurodegenerative Diseases
- CHEM 5825 - Biochemistry of Metabolic Disease
- CHEM 5830 - Graduate Biochemistry II
- CHEM 5835 - Biochemistry of Gene Regulation and Cancer
- CHEM 5845 - Molecular Modeling and Drug Design
- CHEM 5600 - Graduate Topics in Chemistry (course topic must match to the topic area of the track and be preapproved by the Graduate Program Director)

CHEM 5310 or CHEM 5530 may be taken as electives, if not used as a required course above. Additional courses within the department (a minimum of 20 semester hours must be in Chemistry) and in other departments can be used to complete the total of 30 credits required for the degree. Course selections outside of the department must be approved by the Graduate Program Director.

## Track 2: Synthesis and Measurement

Students in this track will learn how to prepare and characterize molecules and materials and how to measure their properties.

Take **one** of the following required courses:

- CHEM 5010 - Advanced Inorganic Chemistry
- CHEM 5310 - Advanced Organic Chemistry

Take **one** of the following required courses:

- CHEM 5110 - Advanced Analytical Chemistry
- CHEM 5221 Practical Applications for Spectroscopy

Take **two** of the following elective courses:

- CHEM 5510 - Computational Chemistry
- CHEM 5530 - Advanced Physical Chemistry

- CHEM 5421 - Cannabis Chemistry
- CHEM 5845 - Molecular Modeling and Drug Design
- CHEM 5600 - Graduate Topics in Chemistry (course topic must match to the topic area of the track and be preapproved by the Graduate Program Director)
- CHEM 5700 - Environmental Chemistry
- CHEM 5810 - Graduate Biochemistry I
- CHEM 5815 - Structural Biology of Neurodegenerative Diseases
- BIOE 5420 - Special Topics in Bioengineering (course topic must be preapproved by the Graduate Director)

CHEM 5010, CHEM 5110, CHEM 5221 or CHEM 5310 may be taken as electives if not used as a required course above. Additional courses within the department (a minimum of 20 semester hours must be in Chemistry) and in other departments can be used to complete the total of 30 credits required for the degree. Course selections outside of the department must be approved by the Graduate Program Director.

### Track 3: Molecular Modeling

Students in this track will learn fundamental principles and modern techniques in computer modeling and apply the acquired knowledge to solve practical problems in chemistry, biochemistry, biophysics, and material sciences.

Take all of the following required courses:

- CHEM 5510 - Computational Chemistry
- CHEM 5530 - Advanced Physical Chemistry

Take **two** of the following electives:

- CHEM 5010 - Advanced Inorganic Chemistry
- CHEM 5310 - Advanced Organic Chemistry
- CHEM 5845 - Molecular Modeling and Drug Design
- CHEM 5600 - Graduate Topics in Chemistry (course topic must match to the topic area of the track and be preapproved by the Graduate Program Director)
- CHEM 5815 - Structural Biology of Neurodegenerative Diseases
- CHEM 5810 - Graduate Biochemistry I

Additionally, students are recommended to take one or two courses from other departments:

- MATH 3191 - Applied Linear Algebra
- MATH 4387 - Applied Regression Analysis
- MATH 5310 - Probability



- MATH 5387 - Applied Regression Analysis
- MATH 5660 - Numerical Analysis I
- CSCI 1410 - Fundamentals of Computing
- CSCI 2312 - Object Oriented Programming
- CSCI 4650 - Numerical Analysis I
- CSCI 5660 - Numerical Analysis I

Additional courses within the department (a minimum of 20 semester hours must be in Chemistry) and in other departments can be used to complete the total of 30 credits required for the degree. Course selections outside of the department and not on the above elective list must be approved by the Graduate Program Director.

### Track 4: Traditional Chemistry

Students that are interested in gaining experience in a broad range of chemistry including the critical sub-disciplines of organic, inorganic, analytical, and physical chemistry are encouraged to consider the traditional track.

Traditional Chemistry MS degree students must complete **the following required courses and a thesis or a final written examination.**

- CHEM 5010 - Advanced Inorganic Chemistry
- CHEM 5110 - Advanced Analytical Chemistry
- CHEM 5310 - Advanced Organic Chemistry
- CHEM 5530 - Advanced Physical Chemistry

Additional courses within the department (a minimum of 20 credit hours must be in Chemistry) and in other departments can be used to complete the total of 30 credits required for the degree. Course selections outside of the department must be approved by the Graduate Program Director.

# COMMUNICATION

**Chair:** Lisa B. Keränen

**Graduate Director:** Hamilton Bean

**Program Assistant:** Michelle A. Médal

**Internship Director:** Megan Hurson

**Office:** Student Commons Building, 1201 Larimer Street, 3rd Floor, Room 3014

**Telephone:** 303-315-1919

## Faculty

**Professors:**

Sarah Fields, PhD, University of Iowa  
Stephen J. Hartnett, PhD, University of California at San Diego

**Associate Professors:**

Hamilton Bean, PhD, University of Colorado at Boulder  
Larry Erbert, PhD, University of Iowa  
Amy Hasinoff, PhD, University of Illinois at Urbana-Champaign  
Lisa B. Keränen, PhD, University of Pittsburgh

**Associate Professors Clinical Track:**

Patrick Shaou-Whea Dodge, PhD, University of Denver

**Assistant Professors:**

Soumia Bardhan, PhD, University of New Mexico  
  
Catalina M. de Onis, PhD, Indiana University  
Mia Fischer, PhD, University of Minnesota

**Senior Instructors:**

Kristy Frie, MA, Regis University  
Yvette Bueno Olson, PhD, University of Miami  
e. j. Yoder, PhD, University of Denver

**Instructors:**

Megan Hurson, PhD, University of Colorado Boulder  
Xiyuan Liu, PhD, University of Illinois at Chicago  
Diann Logan, MA, University of Colorado Denver  
James McNeil, MA, University of Colorado Denver  
  
Ali Nassiri, MA, University of Colorado Denver  
Tamara Powell, PhD, University of California San Diego

**Emeritus:**

Brenda J. Allen, PhD, Howard University  
Sonja K. Foss, PhD, Northwestern University  
James F. Stratman, PhD, Carnegie-Mellon University  
Barbara J. Walkosz, PhD, University of Arizona

Our vibrant community of scholars and teachers is committed to providing a real-world, hands-on, and theoretically robust master's degree that will enrich students' communication knowledge and skills for the twenty-first century. Our program is a 33-credit generalist degree designed to enhance students' intellectual and professional growth through the understanding and practice of effective communication. Our faculty members are nationally and internationally recognized leaders in their field. Students who complete our program often receive offers to top-notch PhD programs or accept

positions related to communication management, public relations, human relations, and corporate and non-profit communication.

## **Graduate Program**

Click here to learn about the **Master of Arts in Communication**.

## **Grade Requirements**

Students must maintain a GPA of 3.0 or higher across all courses applied to a graduate degree or to a graduate certificate.

## **Course Transfer Policy**

A maximum of 12 semester hours of relevant graduate course work may be transferred from another university. Students cannot receive credit for transferred courses in which less than a *B* grade was earned. Course work transferred from another university must be approved by the director of the MA program and must not have been used for another graduate degree.

## **Time Limits for Completion of Degree**

Students have seven years from the date of the beginning of their course work to complete all requirements for a master's degree in communication.

## **Application Procedures for U.S. Citizens**

Students must submit the following materials to apply for admission to the MA program:

- letter of application explaining career plans and reasons for interest in the degree
- online graduate admission application
- three letters of recommendation, preferably from university faculty (those writing the recommendations must use the request for recommendation form and their own letterhead stationery)
- two official transcripts from every college or university attended
- strongly preferred 3.25 undergraduate GPA
- resume or *vita*
- academic writing sample (showing ability to make and sustain an argumentative analysis)
- Optional GRE scores
- \$50 application fee (nonrefundable)
- international students need TOEFL scores

## **Deadlines for Application**

**February 15:** Priority deadline for fall semester start and full consideration for Graduate Teaching Assistantships (GTA). Applications will be considered until May 1, which is the non-priority deadline for fall semester start and excludes GTA consideration.

**October 1:** Deadline for spring semester start. Graduate Teaching Assistantships are generally not offered for spring semester start.

**Application deadlines are firm.**

All application materials not uploaded through the online application process should be sent to:

Graduate School  
University of Colorado Denver  
Campus Box 163  
1380 Lawrence Street, Suite 1250  
P.O. Box 173364 Denver,  
CO 80217-3364

Students are notified by e-mail of the graduate admission committee's decision concerning their admission.

## **Application Procedures for International Students**

Students who are not U.S. citizens should begin the process of application to the MA program in Communication by contacting the Office of International Affairs (website: [www.ucdenver.edu/academics/InternationalPrograms/OIA/admissions/Pages/default.aspx](http://www.ucdenver.edu/academics/InternationalPrograms/OIA/admissions/Pages/default.aspx)) at CU Denver. This office will assist students in compiling their application materials, which then are submitted to the Communication department. See the International Students chapter for further information.

## **Graduate Certificate**

[Click here](#) to learn about the Strategic Communication Graduate Certificate.

## **Grade and Residency Requirements for Certificates**

A grade of *B* or better must be earned in each course completed as part of the certificate (*B-* is not acceptable). All semester hours for a certificate must be earned at CU Denver.

## **Programs**

### **Certificate**

# STRATEGIC COMMUNICATION GRADUATE CERTIFICATE

► Graduate School Policies and Procedures apply to this program.

Strategic Communication has been defined as the management function that entails planning, research, publicity, promotion and collaborative decision-making to help any organization's ability to listen to, appreciate and respond appropriately to those persons and groups whose mutually beneficial relationships the organization needs to foster as it strives to achieve its mission and vision. The Graduate Certificate in Strategic Communication is designed to provide students with the principles and theories that guide the work of public relations practitioners in commercial, public and nonprofit contexts.

Non-degree students who enroll in the MA program following completion of the certificate may transfer up to 12 hours of credits earned for the certificate into credits for the MA degree. The certificate also is designed for students enrolled in a CU Denver's master's program, including the Department of Communication's MA program. For such students, the certificate can be completed as part of or in addition to the coursework required for the master's degree.

Recipients of the Undergraduate Certificate in Strategic Communication are ineligible to complete this certificate.

## **Application Procedures and Additional Information**

Students should apply for the Graduate Certificate in Strategic Communication before or after the completion of the required courses. To apply, students must complete the certificate application, attach it to an unofficial transcript, and return it to Dr. Hamilton Bean in room 3010 of the Student Commons Building, or mail to Department of Communication; P. O. Box 173364, Campus Box 176; University of Colorado Denver; Denver, CO 80217-3364. The approved certificate is posted to the transcript and mailed to the student after final grades are posted for the semester.

Students who are not already enrolled at CU Denver must also complete an online Application for Non-Degree Admission prior to registering for courses.

Additional information about the Graduate Certificate in Strategic Communication may be obtained from Dr. Hamilton Bean, Department of Communication, Student Commons Building, 1201 Larimer Street, Suite 3010, 303-315-1909, [Hamilton.Bean@ucdenver.edu](mailto:Hamilton.Bean@ucdenver.edu).

## Certificate Requirements

1. Students must complete a minimum of 12 credits from approved courses.
2. Students must complete all courses at the graduate level (5000 or above) to fulfill the requirements of the certificate.
3. Students must earn a minimum grade of B (3.0) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All of the credit hours for the certificate must be earned from faculty at the University of Colorado Denver.

Complete the following courses:

- COMM 5051 - Advanced Strategic Communication
- COMM 5240 - Organizational Communication
- COMM 5939 - Internship
- An elective at the graduate level from the College of Arts & Media, School of Business, the School of Public Affairs, or the Anschutz Medical Campus. The elective must be approved in consultation with the Department of Communication.

Students may be permitted to take courses other than those listed above to fulfill the requirements for the certificate if those courses fit their professional goals better. Requests for approval for substitute courses, including an explanation for the substitution, must be made in writing to Dr. Hamilton Bean.  
Master of Arts

# COMMUNICATION MA

► Graduate School Policies and Procedures apply to this program

Our vibrant community of scholars and teachers is committed to providing a real world, hands-on, and theoretically robust master's degree that will enrich students' communication knowledge and skills. Our program is a 33-credit generalist degree designed to enhance students' intellectual and professional growth through the understanding, analysis and practice of effective communication. Our faculty members are nationally and internationally recognized leaders in their fields, and our students hail from all over the world.

Some students who complete our program receive offers to top-notch PhD programs while others accept or continue in positions related to communication management,

strategic communication, public relations, media relations, human relations, and corporate and non-profit communications.

## **Degree Requirements**

1. Students must complete a minimum of 33 credits from approved courses.
2. Students must complete a minimum of 27 credits at the graduate level.
3. Students must earn a minimum grade of B (3.0) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail.
4. All credits for the degree must be completed with CU Denver faculty.

## **Required Introduction Course**

Students must take COMM 6013 in the first semester it is available.

- COMM 6013 - Introduction to Graduate Work in Communication

**Total: 3 Hours**

## **Required Methods Course**

Students must take COMM 5221 in the first semester it is available.

- COMM 5221 - Research Methods: Qualitative

**Total: 3 Hours**

## **Seminars**

Seminars are Communication courses at the 6000 level and are often special topics classes taught in faculty areas of expertise. Students must take two graduate Communication seminars in addition to the required COMM 6013 course. The optional COMM 6950 Master's Thesis or COMM 6960 Master's Project do not count as seminars.

**Total: 6 Hours**

## **Electives**

Students must complete seven elective courses. All electives must be at the 5000 or 6000 level; however, 1 course (3 credits) is permitted at the 4000 level from outside the

Communication department. A total of 6 credits may be outside the Communication department.

Courses that count as electives include:

- Any Communication courses taken at the 5000 or 6000 level that do not fulfill another program requirement.
- Communication internships (max 6 credit hours)
- Communication independent studies (max 6 credit hours)
- Courses from outside the Communication department (max 6 credit hours; more with the approval of the student's advisor and the Director of Graduate Studies).
- Thesis credit, if applicable

**Total: 21 Hours**

## **Optional Thesis**

Students who choose to complete a thesis must register for between 3-6 semester hours of thesis work, which may substitute for one or two elective courses. Students who complete a thesis still complete a total of 33 credit hours.

**Total: 3-6 Hours**

All students must pass a comprehensive examination at the end of course work.

Students must comply with all Graduate School Policies and Procedures

**Degree Total: 33 Hours**

# **ECONOMICS**

**Chair:** Brian Duncan

**Program Assistant:** Christine Lukvec

**Office:** Lawrence Street Center, LW-470

**Telephone:** 303-315-2030

**Website:** [econ.ucdenver.edu/home/](http://econ.ucdenver.edu/home/)

## **Faculty**

**Professors:**

Laura M. Argys, PhD, University of Colorado Boulder

Brian J. Duncan, PhD, University of California at Santa Barbara

Daniel I. Rees, PhD, Cornell University



W. James Smith, PhD, University of Colorado Boulder  
Buhong Zheng, PhD, West Virginia University

**Associate Professors:**

Andrew I. Friedson, PhD, Syracuse University  
Hani Mansour, PhD, University of California at Santa Barbara

**Assistant Professors:**

Ryan P. Brown, PhD, Duke University  
Chloe East, PhD, University of California Davis  
Maulik Jagnani, PhD, Cornell University  
Phillip Luck, PhD, University of California Davis  
Andrea Velasquez, PhD, Duke University

**Clinical Teaching Assistant Professors:**

Enoch Cheng, PhD, University of California-Los Angeles  
Ernest Boffy-Ramirez, University of California at Santa Barbara  
Soojae Moon-Anderson, University of Colorado Boulder

**Instructors:**

Debbie Evercloud, PhD, University of Virginia  
Nicholas Golding, MA, Ohio State University  
Lawrence Hamelin, MA, University of Colorado Denver  
Kyle J. Hurst, MA, Baylor University  
Kyle Montanio, PhD, University of Rhode Island  
George K. Quansah, MA, University of Colorado Denver  
Yue Shen, PhD, Queen's University  
Kawin Thamtanajit, PhD, University of Delaware  
Chun-Chieh Hu, PhD, Syracuse University

Economics is the science of decision making. The rigorous and general approach that characterizes economics lends itself to a remarkably wide field of practical application. Economists are noted for major contributions in a number of fields including government policy, taxation, law, regulation, political economy, international trade and finance, international and U.S. development, marketing, environmental studies, medical policy, portfolio management and banking. The broad and rigorous training of economics majors accounts for their significant demand in virtually every industry and government agency. Economics provides excellent preparation for advanced graduate study as well. Recent studies indicate that economics is a preferred degree for prestigious MBA programs and law schools.

## **Graduate Program**

The Department of Economics offers an MA program in Economics and MS and Ph.D. programs in Health Economics. The MA program in Economics trains students in quantitative and applied economic skills and is directed toward two groups: (1) those

who look on the MA as a key to career development in business or government service, and (2) those who desire to go on to pursue the PhD in economics or related fields. The strong quantitative emphasis of the department's MA program is ideally suited for the pursuit of both these goals. Our graduates are sought out by energy companies, defense contractors, health care agencies, consulting firms, financial institutions, and other companies looking for employees who know how to use real-world data to answer research questions. Many of our graduates use their MA degree in economics at CU Denver as a springboard towards pursuing a Ph.D. degree in economics at highly ranked programs across the country.

The MS and Ph.D. programs in Health Economics are designed to train scientists to engage in modern economic research related to questions pertinent to health policy, health behaviors, and health care services. Both programs are collaborative among faculty in the Department of Economics (ECON), housed in the College of Liberal Arts and Sciences, and the Department of Health Systems, Management & Policy (HSMP), housed in the Colorado School of Public Health. The ECON coursework grounds students in rigorous economic theory and modern statistical methods, whereas the HSMP coursework connects students to institutional details of the health care sector, study design, quantitative methods, cost-effectiveness analysis, and grant writing. The Health Economics programs equip students with an applied interdisciplinary skill set that integrates creative knowledge with the technical expertise that is in demand in the health care industry, enhancing their career and professional development.

Click here to learn about the **Applied Econometrics and Data Analytics Graduate Certificate**.

Click here to learn about the **Health Economics and Outcomes Research Graduate Certificate**.

Click here to learn about the **Master of Arts in Economics**.

Click here to learn about the **Master of Science in Health Economics**.

Click here to learn about the **MA Economics/MS Applied Mathematics Dual Degree**.

Click here to learn about the **MA Economics/MS Finance Dual Degree**.

Click here to learn about the **MA Economics/MPA Public Administration Dual Degree**.

Click here to learn about the **Doctorate in Health Economics**.

## **Programs**

### **Certificate**

# APPLIED ECONOMETRICS AND DATA ANALYTICS GRADUATE CERTIFICATE

## Introduction

The Graduate Certificate in Applied Econometrics & Data Analytics provides students with a strong graduate-level foundation in modern applied econometrics and quantitative analysis. The unique analytic skill set delivered in this certificate is sought out by energy companies, defense contractors, health care agencies, consulting firms, financial institutions and other companies in the Denver area that are looking for employees who know how to use real world data to answer research questions. Upon earning the certificate, students will be able to:

1. Explain the potential outcomes framework and how it informs empirical research.
2. Distinguish between causal and correlational relationships.
3. Set-up randomized experiments and understand factors that could contaminate them.
4. Identify natural experiments and how to apply them in research.
5. Understand the Difference-in-Difference estimator and its applications.
6. Apply matching techniques.
7. Use Panel data models, such as fixed effects estimators.
8. Understand the use of instrumental variables and how they are applied in research.
9. Apply the Regression Discontinuity estimator and apply it in economic research.

These certificate requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their certificate advisor and CLAS advisor to confirm the best plans of study before finalizing them.

## Program Delivery

This is an on-campus program.

## General Requirements

[Click here](#) for information about Academic Policies.

## **Admission Requirements**

- Degree: BA/BS
- A minimum GPA of 3.00 is recommended

## **Application Process**

Applicants for a Graduate Certificate Program will send the following documents to the Certificate Program Director:

- Graduate Certificate Application Form:
- Official Transcripts
- Resume
- Letter of interest

Upon approval of the student's admission by the Graduate Certificate Program, the program director will send the student's certificate admission file to the Graduate School. The Graduate School will confirm the applicant's credentials, will determine whether the student meets the general academic requirements of the Graduate School, will admit the student and inform the student of his/her admission to the Graduate Certificate Program.

## **Additional Requirements**

- Students may be enrolled as a CU Denver graduate student in any discipline, or as a CU Denver non-degree seeking graduate student with a bachelor's degree.
- Students should have completed Introduction to Econometrics (ECON 4811), or equivalent coursework, or have professional experience in statistical analysis.
- International students must submit TOEFL scores or otherwise satisfy the University's English Language Proficiency requirement.

## **Certificate Requirements**

1. Students must complete a minimum of 12 ECON credit hours.
2. Students must complete all courses at the graduate level (5000 or above) to fulfill the requirements of the certificate.
3. Students must earn a minimum grade of B (3.0) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All credit hours for the certificate must be earned at the University of Colorado Denver.

## **Certificate Restrictions, Allowances and Recommendations**

1. Students have 7 years to complete this certificate.
2. Students should evaluate course descriptions to determine if the prerequisites or corequisites have been completed in order to move forward in the certificate.
3. No course may be taken more than twice.
4. Graduate level ECON credit counted towards the Graduate Certificate in Health Economics & Outcomes Research may be subsequently counted towards a CU Denver graduate degree in Economics. Certificate students are not guaranteed admission to the M.S. program in Health Economics. However, certificate students can apply to the M.S. program in economics at any time.
5. Students who complete the Graduate Certificate in Health Economics & Outcomes Research and later apply to the M.S. program in Health Economics at CU Denver may submit their certificate in place of GRE scores and letters of recommendation.
6. Students admitted to the M.A., M.S., or Ph.D. programs in economics at CU Denver may complete the graduate certificate concurrently with their degree program. However, courses that have already been counted towards any degree already awarded (undergraduate or graduate) may not be counted towards the certificate retroactively.

## **Required Courses**

Complete **all** the following ECON courses:

- ECON 5030 - Data Analysis with SAS
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II
- ECON 6053 - Seminar In Applied Economics I
- ECON 6054 - Seminar In Applied Economics II (3 credits total across ECON 6053 and 6054)

**Total: 12 Credit Hours**

# **HEALTH ECONOMICS AND OUTCOMES RESEARCH GRADUATE CERTIFICATE**

Graduate Certificate in Health Economics & Outcomes Research is designed to train scientists to engage in modern economic research related to questions pertinent to

health policy, health behaviors, and health care services. The unique analytic skill set delivered in this certificate is sought out health care agencies, state agencies, and consulting firms in the Denver area that are looking for employees who know how to use health data to answer research questions. Upon earning this certificate, students will:

1. Have sufficient knowledge of econometric theory and techniques to make them an effective consumer and producer of empirical research in health economics.
2. Understand the challenges in identifying causal relationships using health data.
3. Understand the fundamentals of the potential outcomes framework, randomized experiments, natural experiments, panel data models, matching, instrumental variables and regression discontinuity designs.
4. Understand the economic approach to studying the healthcare sector, health behaviors, and health outcomes.
5. Understand how different markets function in the health care sector, such as the market for health care, health insurance, health labor (such as physicians and nursing), and pharmaceuticals.

These certificate requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their certificate advisor and CLAS advisor to confirm the best plans of study before finalizing them.

## **Program Delivery**

This is an on-campus program.

## **General Requirements**

[Click here for information about Academic Policies.](#)

## **Admission Requirements**

- Degree: BA/BS
- A minimum GPA of 3.00 is recommended

## **Application Process**

Applicants for a Graduate Certificate Program will send the following documents to the Certificate Program Director:

- Graduate Certificate Application Form
- Official Transcripts

- Resume
- Letter of interest

Upon approval of the student's admission by the Graduate Certificate Program, the program director will send the student's certificate admission file to the Graduate School. The Graduate School will confirm the applicant's credentials, will determine whether the student meets the general academic requirements of the Graduate School, will admit the student and inform the student of his/her admission to the Graduate Certificate Program.

## **Additional Requirements**

- Students may be enrolled as a CU Denver graduate student in any discipline, or as a CU Denver non-degree seeking student with a bachelor's degree.
- Have completed Introduction to Econometrics (ECON 4811), or equivalent coursework, or have professional experience in statistical analysis.
- International students must submit TOEFL scores or otherwise satisfy the University's English Language Proficiency requirement.

## **Certificate Requirements**

1. Students must complete a minimum of 12 ECON credit hours.
2. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
3. All credit hours for the certificate must be earned at the University of Colorado Denver.

## **Certificate Restrictions, Allowances and Recommendations**

1. Students have 7 years to complete this certificate.
2. Students should evaluate course descriptions to determine if the prerequisites or corequisites have been completed in order to move forward in the certificate.
3. No course may be taken more than twice.
4. Graduate level ECON credit counted towards the Graduate Certificate in Health Economics & Outcomes Research may be subsequently counted towards a CU Denver graduate degree in Economics. Certificate students are not guaranteed admission to the M.S. program in Health Economics. However, certificate students can apply to the M.S. program in economics at any time.
5. Students who complete the Graduate Certificate in Health Economics & Outcomes Research and later apply to the M.S. program in Health Economics at CU Denver may submit their certificate in place of GRE scores and letters of recommendation.

6. Students admitted to the M.A., M.S., or Ph.D. programs in economics at CU Denver may complete the graduate certificate concurrently with their degree program. However, courses that have already been counted towards any degree already awarded (undergraduate or graduate) may not be counted towards the certificate retroactively.

## Required Courses

Complete **all** the following ECON courses:

- ECON 5030 - Data Analysis with SAS
- ECON 4812-Advanced Econometric Methods or ECON 5823 - Econometrics II
- ECON 7661 - Health Economics I
- ECON 7662 - Health Economics II

## Total: 12 Credit Hours

### Master of Arts

# ECONOMICS MA

► Graduate School Policies and Procedures apply to this program

**Graduate Advisors:** Brian Duncan and Hani Mansour

The MA program in economics is designed to train students in the quantitative and applied economic skills that will best enhance their future employment opportunities in the private and public sectors, or their pursuit of PhD studies in economics or related fields.

Our MA program emphasizes extensive training in mathematical and quantitative analysis, including the provision of substantial exposure to applied econometrics, working with large and diverse data sets, and a wide range of statistical software. The program gives students the applied skills that employers demand, provides those pursuing advanced degrees an edge in gaining admission to top-flight PhD programs- and enhances the likelihood of the student's ultimate success.

## Admission Requirements

- Meet all general admission requirements of the Graduate School (including a 2.50 undergraduate grade-point average).
- Submit three letters of recommendation (at least two letters should come from individuals who are familiar with your scholarly record. The third can be an



additional academic reference or professional reference from someone who knows you well and can comment on your potential as a graduate student).

- Submit official transcripts from all colleges attended.
- Have completed 15 credit hours of undergraduate economics, including intermediate microeconomic theory and intermediate macroeconomic theory (upper division courses).
- Have completed courses in calculus and statistics (preferably a year of calculus and a course in econometrics or similar upper division statistics course. A course in linear algebra and/or differential equations is recommended).
- Submit GRE scores. All applicants, international and domestic, must submit GRE scores regardless of prior degrees, course work, or work experience. The institution code for CU Denver is 4875. Most students admitted to the MA program in economics score 154 or above (690 or above using the prior test scale) on the quantitative section of the GRE. However, this is not a minimum GRE cutoff score, nor is it a score above which admission is guaranteed. GRE scores are used in conjunction with other indicators of academic success at the Master's level. Applicants must show strong evidence of quantitative ability either through high grades in math, statistics, and economics courses, a high quant score on the GRE, or preferably both.
- International students must submit TOEFL scores. The minimum required score is 203 (computer-based TOEFL), 75 (IBT-based TOEFL), 537 (paper-based TOEFL), or 6.5 (IELTS). The institution code for CU Denver is 4875. The minimum TOEFL scores are a requirement of the Graduate School and cannot be waived by the department of economics. The Graduate School may waive the TOEFL requirement for applicants who have attended a college or university in the United States as a full-time student and have completed two semesters of academic work with a "B" average (3.0 GPA or higher). Please contact the International Admissions office if you have questions about this requirement.

### **Application Deadlines:**

**Fall - June 1**

**Spring - December 1**

The Department of Economics accepts late applications after these official deadlines. However, there is no guarantee that a late application will be processed in time for the start of the semester. Students are encouraged to apply well in advance the application deadline.

International students who apply after the June 1 or December 1 deadline may not have time to obtain a student visa. Being admitted to the MA program in economics does not guarantee that a student will receive a student visa in time for the start of the semester. International students who are admitted to the MA program, but fail to obtain a visa in time, may defer admission for up to one year. All questions about student visas should be directed to the Office of International Admissions.

## **Degree Requirements**

1. Students must complete a minimum of 30 credit hours of coursework, of which 21 hours are core requirements. Each student's plan will be worked out in conjunction with the graduate advisor. Students are expected to meet all course prerequisites.
2. Students must complete a minimum of 30 graduate (5000 and above) level credit hours.
3. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail. No course may be taken more than twice and only one attempt will retain the credit.
4. Students must complete all credits for the degree with CU Denver faculty.

## **Core Courses**

- ECON 5073 - Microeconomic Theory
- ECON 5083 - Macroeconomic Theory
- ECON 5803 - Mathematical Economics
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II
- ECON 6053 - Seminar In Applied Economics or ECON 6054 - Seminar In Applied Economics II
- ECON 6073 - Research Seminar

**Total: 21 Credits**

## **Electives**

Three courses numbered 5000 or higher with an ECON subject code. After completing 6 credit hours of ECON 6053/6054 as part of the economics core, additional ECON 6053/6054 courses may be counted as electives.

**Total: 9 Credits**

**Degree Total: 30 Credits**

# ECONOMICS MA/PUBLIC ADMINISTRATION MPA DUAL DEGREE

► Graduate School Policies and Procedures apply to this program

**Graduate Advisors:** Brian Duncan and Hani Mansour

The fields of public administration and economics are inextricably linked. Economists provide much of the theory and analytic foundation that administrators use to evaluate and implement policy. Given that the capital of the state of Colorado is in Denver, there is great need for administrators that fully understand methods of program evaluation and have the theoretical background needed to forecast how individuals and institutions will respond to new proposals. Similarly, good theory and practice must take into account how the proposals will be implemented and results interpreted. Both administrators and economists need to be engaged in constructive dialog for either to be fully effective.

A “dual” degree means that students who complete the program earn two master’s degrees: MA in economics and MPA in public administration. Students interested in completing the dual degree in economics and public administration must apply separately to each program, meet the admission requirements of each program, and be accepted by each program. If one program accepts a student for the dual degree but the other program does not, then the student may not graduate under the dual degree program. Students may apply to both programs at the same time or apply to the economics program first, and then to the public administration program after their first semester, or vice versa. Both programs must be completed in the same semester to take advantage of the dual degree program. Further information about this program can be obtained from either the Department of Economics or the School of Public Affairs.

[Click here](#) or admissions requirements for the MA program in Economics

[Click here](#) for admissions requirements for the MPA program in Public Administration

## **Degree Requirements**

The requirements for the dual degree in economics and public administration include completing 21 credit hours in ECON and 27 credit hours in PUAD (48 total credit hours).

Students are expected to meet all course prerequisites. A grade of B- or better is required in all courses, with a cumulative grade point average of B (3.0) or above. No course may be taken more than twice.

## **Economics Core Courses (15 Hours)**

- ECON 5073 - Microeconomic Theory
- ECON 5083 - Macroeconomic Theory
- ECON 5803 - Mathematical Economics
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II

## **Public Administration Core Courses (18 credits)**

- PUAD 5006 - Public Service Leadership and Ethics
- PUAD 5008 - Evidence-Based Decision-Making
- PUAD 5001 - Introduction to Public Administration and Public Service
- PUAD 5002 - Organizational Management and Behavior
- PUAD 5003 - Research and Analytic Methods
- PUAD 5004 - Economics and Public Finance
- PUAD 5005 - The Policy Process and Democracy
- PUAD 5503 - Public Budgeting and Finance

## **Economics Electives (3 or 6 hours)**

Any course numbered 5000 or higher with an ECON prefix. Students planning on taking ECON 6073 are strongly encouraged to take 3 elective hours of ECON 6053/6054.

## **Public Administration Electives (6 or 9 hours)**

Any course numbered 5000 or higher with a PUAD prefix. Contact a graduate SPA advisor for information about their course requirements.

## **Capstone Course**

- ECON 6073 - Research Seminar

OR

- PUAD 5361 - Capstone Seminar

If the student takes ECON 6073, then 3 hours of elective credits must come from Economics and 9 from SPA. If the student takes PUAD 5361, then 6 hours of elective credits must come from Economics and 6 from SPA.

**Master of Science/Master of Arts**

# **ECONOMICS MA/APPLIED MATHEMATICS MS DUAL DEGREE, WITH A FOCUS IN APPLIED STATISTICS**

► Graduate School Policies and Procedures apply to this program.

**Graduate Advisors:** Brian Duncan and Hani Mansour

The fields of mathematics and economics are inextricably linked. In economics, mathematics and statistics are used extensively in theory construction, tests of existing theories and discovery of regularities to inform new theories. Economics also gives mathematicians/statisticians new challenges, new outlets and new ideas to incorporate in mathematics. These complementarities have long been recognized and economics graduate students have always been advised to take advanced courses in statistics.

A “dual” degree means that students who complete the program earn two master’s degrees: MA in economics and MS in applied mathematics. Students interested in completing the dual degree in economics and applied mathematics must apply separately to each program, meet the admission requirements of each program, and be accepted by each program. If one program accepts a student for the dual degree but the other program does not, then the student may not graduate under the dual degree program. Students may apply to both programs at the same time or apply to the economics program first, and then to the applied math program after their first semester, or vice versa. Both programs must be completed in the same semester to take advantage of the dual degree program. Further information about this program can be obtained from either the Department of Economics or the Math Department.

[Click here for admissions requirements for the MA program in Economics](#)

[Click here for admissions requirements for the MS program in Applied Mathematics](#)

There are an increasing number of economics MA students wishing to obtain graduate training and a degree in statistics. Having an MA degree in economics and an MS degree in Applied Mathematics will make a student highly employable in the job market and provide them an edge in applying for elite PhD programs.

## Degree Requirements

The requirements for the dual degree in economics and applied mathematics include completing 21 credit hours in ECON and 21 credit hours in MATH (42 total credit hours).

Students are expected to meet all course prerequisites. ECON 5803 – Mathematical Economics is a prerequisite for ECON 5073 - Microeconomic Theory and ECON 5813 - Econometrics I. This prerequisite requirement is waived for students who are currently admitted to the MS Applied Mathematics program.

A grade of B- or better is required in all courses, with a cumulative grade point average of B (3.0) or above. No course may be taken more than twice.

## Core Courses

Take all of the following courses:

- ECON 5073 - Microeconomic Theory
- ECON 5083 - Macroeconomic Theory
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II
- ECON 6053 - Seminar In Applied Economics or ECON 6054 - Seminar In Applied Economics II
- ECON 6073 - Research Seminar
- MATH 5070 - Applied Analysis
- MATH 5310 - Probability
- MATH 5320 - Introduction to Mathematical Statistics
- MATH 5718 - Applied Linear Algebra
- MATH 6330 - Workshop in Statistical Consulting

Take one of the following courses:

- MATH 5394 - Experimental Designs
- MATH 6376 - Statistical Computing
- MATH 6380 - Stochastic Processes
- MATH 6384 - Spatial and Functional Data Analysis
- MATH 6388 - Statistical and Machine Learning
- MATH 7384 - Mathematical Probability
- MATH 7826 - Topics in Probability and Statistics
- An additional course given prior approval by the student's advisor and the Director of the Program in Statistics.

**Total: 36 hours**

## Electives

One 5000 or higher course with a MATH prefix (3 semester hours), except MATH 5000-5010, MATH 5017, MATH 5198, and MATH 5250. Contact a graduate advisor in the Math Department for information about Math course requirements.

One 5000 or higher course with an ECON prefix (3 semester hours).

Contact a graduate advisor in the Economics Department for information about Econ course requirements.

**Total: 6 Hours**

## Dual Degree Total: 42 Hours

**Master of Science in Finance/Master of Arts in Economics**

# ECONOMICS MA/FINANCE MS DUAL DEGREE

► Graduate School Policies and Procedures apply to this program

**Graduate Advisors:** Brian Duncan and Hani Mansour

For students interested in combining the quantitative skills of an economics degree with the specific applications of a business degree, we offer an MA economics / MS finance dual degree. This 42-semester-hour program is offered jointly with the Business School.

A “dual” degree means that students who complete the program earn two master’s degrees: MA in economics and MS in finance. Students interested in completing the dual degree in economics and public administration must apply separately to each program, meet the admission requirements of each program, and be accepted by each program. If one program accepts a student for the dual degree but the other program does not, then the student may not graduate under the dual degree program. Students may apply to both programs at the same time or apply to the economics program first, and then to the finance program after their first semester, or vice versa. Both programs must be completed in the same semester to take advantage of the dual degree program. Further information about this program can be obtained from either the Department of Economics or the Business School.

[Click here for admissions requirements for the MA program in Economics](#)

Click [here](#) for admissions requirements for the MS program in Finance and Risk Management

The dual degree program is intended to create highly-skilled research professionals with considerable econometric skill as well as familiarity with their chosen financial institutions. Given the similarity in course work within the two programs, there can be considerable time savings for the student. Essentially, the program allows students to complete the two programs that separately would require 60 hours of course work with 42 hours of combined course work.

## **Degree Requirements**

The requirements for the dual degree in economics and finance include completing 21 credit hours in ECON and 21 credit hours in FNCE (42 total credit hours)

Students are expected to meet all course prerequisites. A grade of B- or better is required in all courses, with a cumulative grade point average of B (3.0) or above. No course may be taken more than twice.

## **Core Courses**

- ECON 5073 - Microeconomic Theory
- ECON 5083 - Macroeconomic Theory
- ECON 5803 - Mathematical Economics
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II
- ECON 6073 - Research Seminar
- BUSN 6640 - Financial Management
- FNCE 6300 - Macroeconomics and Financial Markets
- FNCE 6330 - Investment Management Analysis
- FNCE 6380 - Futures and Options

**-OR-**

- FNCE 6382 - Survey of Financial Derivatives

**-OR-**

- FNCE 6410 - Real Options and Decisions Under Uncertainty

**Total: 30 Hours**

## **Electives**



Three 6000 or higher courses with a FNCE prefix (9 semester hours), except FNCE 6290 - Quantitative Methods. Contact a graduate advisor in the Business School for information about Finance course requirements.

One 5000 or higher course with an ECON prefix (3 semester hours). Students are strongly encouraged to take 3 elective hours of ECON 6053/6054 or to meet with an economics graduate advisor to discuss how to otherwise prepare for ECON 6073 - Research Seminar. Contact a graduate advisor in the Economics Department for information about ECON course requirements.

**Total: 12 Hours**

**Dual Degree Total: 42 Hours**

**Other Programs**

# ECONOMICS BA/MA

## Introduction

Please click [here](#) to see Economics department information.

## Program Delivery

- This is an on-campus program.

## Declaring This Major

- Students should meet with the graduate program director and undergraduate faculty advisor to learn more about admissions requirements for this program.

## General Requirements

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements
- CU Denver Core Curriculum
- College of Liberal Arts & Sciences Graduation Requirements
- [Click here for information about Academic Policies](#)

Program Requirements

## Course Requirements

Undergraduate required courses (30 or 31 credit hours):

- ECON 2012 - Principles of Economics: Macroeconomics

- ECON 2022 - Principles of Economics: Microeconomics
  - ECON 4071 - Intermediate Microeconomic Theory
  - ECON 4081 - Intermediate Macroeconomic Theory
  - MATH 3382 - Statistical Theory
- OR**
- ECON 3811 - Statistics with Computer Applications

Undergraduate electives (9 credit hours):

- Three undergraduate economics courses and at least 2 of them must be at 4000-level

Graduate courses (18 credit hours):

- ECON 5073 - Microeconomic Theory
- ECON 5083 - Macroeconomic Theory
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II
- ECON 6053 - Seminar In Applied Economics
- ECON 6054 - Seminar In Applied Economics II
- ECON 6073 - Research Seminar

The “Seminar in Applied Economics” (ECON 6053, 6054) are 8-week 1.5 credit modules. After completing 3 credit hours of ECON 6053/6054 as part of the economics core, additional ECON 6053/6054 courses may be counted as electives

Graduate electives (9 credit hours):

Any course numbered 5000 or higher with an ECON prefix.

Total economics/mathematics credit hours = 66 or 67

Total credit hours for the combined degrees = 135

**Note:** The mathematics courses that students take also fulfill some of CU Denver (up to 8 hours) and CLAS (up to 4 hours) graduation requirements.

- MATH 2411 - Calculus II
- MATH 2421 - Calculus III
- MATH 1401 - Calculus I

## Dual Credits

Students need to take only three electives at the undergraduate level; the three electives taken at the graduate level are double counted in fulfilling both BA and MA graduation requirements.

ECON 5803 (Graduate Mathematical Economics) is waived or can be counted as one graduate-level elective. The total dual credits are 12 hours.

## **Additional Graduation Requirements**

All other grade and GPA requirements towards the BA and MA degrees (e.g., a C- or better is needed in each undergraduate-level required course and a B- or better is needed in each graduate-level required course). Students are expected to meet all course prerequisites. Students will earn the BA degree in their fourth year upon completing all the requirements for the BA degree. Students are expected to be admitted to the Graduate School in their final two semesters prior to earning the MA degree.

## **Admission Requirements**

1. Meet all general admission requirements of the Graduate School
2. Be a current CU Denver Economics major with a GPA of 3.5 or better
3. The following courses must have been completed at CU Denver with a grade of B+ or better: MATH 2411, MATH 2421, ECON 4071, and ECON 4811
4. Students should apply in the semester when requirement 3 is satisfied (typically in the end of the fall semester of their junior year - as in the sample curriculum below)
5. Students who do not meet requirements 2 and 3 may apply, but must submit GRE scores and two letters of recommendation; otherwise both are waived
6. To apply, students should submit a regular application to the MA ECON program here: <https://application.admissions.ucdenver.edu/apply/>. Students who meet the admission requirements are not required to pay the application fee, submit GRE scores, letters of recommendation, or a personal statement. Students must contact the graduate advisor after their application is submitted to have this material waived (brian.duncan@ucdenver.edu)

# **ENGLISH**

**Chair:** Philip Joseph

**Associate Chair:** Michelle Cmstock

**Program Coordinator:** Francine Olivas-Zarate

**Program Assistant:** Janelle (Jenny) Dunington

**Office:** 1015 9th Street Park

**Telephone:** 303-315-7830

**Fax:** 303-315-7826

**Website:** [clas.ucdenver.edu/english/](http://clas.ucdenver.edu/english/)

## **Faculty**

**Professors:**

Joanne Addison, PhD, Purdue University  
Colleen Donnelly, PhD, University of Washington  
Jeffrey Franklin, PhD, University of Florida  
Bradford K. Mudge, PhD, University of Texas, Austin  
Cynthia Wong, PhD, University of Wisconsin, Milwaukee

**Associate Professors:**

Pompa Banerjee, PhD, University of Massachusetts  
Brian Barker, PhD, University of Houston  
Nicole Beer, PhD, University of Missouri-Columbia  
Teague Bohlen, MFA, Arizona State University  
Nancy Ciccone, PhD, University of California, Berkeley  
Michelle Comstock, PhD, Purdue University  
Sarah Hagelin, PhD, University of Virginia  
Rodney Herring, PhD, University of Texas, Austin  
Philip Joseph, PhD, State University of New York, Buffalo  
Joanna Luloff, MFA, Emerson College; PhD, University of Missouri  
Wayne Miller, MFA, University of Houston  
Gillian Silverman, PhD, Duke University  
John Tinnell, PhD, University of Florida, Gainesville  
Catherine A. Wiley, PhD, University of Wisconsin, Madison  
Ian Ying, PhD, University of Arizona

**Assistant Professors:**

Andrew Scahill, PhD, University of Texas, Austin

The English Studies graduate program provides a strong foundation in primary knowledge areas, including the history of the English language, the major genres and the theory of genre, approaches to literacy, and the impact of technology on reading and writing. The program invites MA candidates to build on this foundation by developing an expertise in teaching, and by expanding their content knowledge with courses in rhetoric, literature, film, and applied linguistics.

## **Graduate Program**

Click here to learn about the **MA in English**.

## **Certificates**

The English department also offers a graduate certificate in teaching English to speakers of other languages.

Click here to learn about **Teaching English Language Learners Graduate Certificate**.

Click here to learn about the **Graduate Certificate in Teaching College-level Literature and Film**.

Click here to learn about the **Graduate Certificate in Teaching College-level Language and Literacy**.

## **Additional Information**

For additional information on majors, options, minors and certificates call the Department of English office at 303-315-7830.

### **Programs**

#### **Certificate**

# **TEACHING COLLEGE-LEVEL LANGUAGE AND LITERACY**

Graduate School Policies and Procedures apply to this program.

The English Department at the University of Colorado Denver offers a Graduate Certificate in Teaching College-level Language and Literacy. It fulfills the increasing needs of educators seeking to deepen and to broaden their specialization. It allows an English Master's Candidate to specialize in an area of study in addition to the primary area of degree focus. The certificate does not grant state licensure. It ensures competency for those who already are licensed, provides documentation in expertise for those teaching in community colleges, and enables specialization for those with master's degrees in related fields (i.e. Rhetoric, Composition, Literature, Film Studies, Humanities, Education).

*This certificate can be completed fully online, fully on campus, or a combination of the two.*

### **General Requirements:**

1. Students must complete a minimum of 18 ENGL credit hours
2. Students must complete all 18 ENGL credits at the graduate (5000 or above) level.
3. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.

4. All credits for the certificate must be completed with CU Denver faculty.
5. All courses must be completed with ENGL subject code.
6. All candidates must possess a Bachelor's of Arts in any field.

## **Additional Information**

Additional Information about the Graduate Certificate in Teaching College-level Language and Literacy may be obtained from:

**Associate Professor:** Rodney Herring

**Office:** 1061 9th St. Park, Room 102

**Phone:** 303-315-7848

**E-mail:** Rodney.Herring@ucdenver.edu

## **Required Courses (12 Hours)**

- ENGL 5093 - Teaching of Writing
- ENGL 5155 - Genres of Writing

OR

- ENGL 5135 - English Language Study
- ENGL 5165 - Literacy and Technology
- ENGL 5601 - Principles and Practices of Second Language Acquisition

OR

- ENGL 5651 - Second Language Writing

## **Electives**

Choose 2 graduate level courses (may include 6 hours of Denver Writing Project Summer Institute)

# **TEACHING COLLEGE-LEVEL LITERATURE AND FILM GRADUATE CERTIFICATE**

Graduate School Policies and Procedures apply to this program

The English Department at the University of Colorado Denver offers a Graduate Certificate in Teaching College-level Literature and Film. It fulfills the increasing needs of educators seeking to deepen and to broaden their content specialization. It allows an English Master's Candidate to specialize in an area of study in addition to the primary area of degree focus.

The certificate does not grant state licensure. It ensures competency for those who already are licensed, provides documentation in expertise for those teaching in community colleges, and enables specialization for those with master's degrees in related fields (i.e. Rhetoric, Composition, Literature, Film Studies, Humanities, Education).

### **General Requirements:**

1. Students must complete a minimum of 18 ENGL credit hours
2. Students must complete all 18 ENGL credits at the graduate (5000 or above) level.
3. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All credits for the certificate must be completed with CU Denver faculty.
5. All courses must be completed with ENGL subject code.
6. All candidates must possess a Bachelor's of Arts in any field.

### **Additional Requirements:**

Additional Information about the Graduate Certificate in Teaching College-level Literature and Film may be obtained from:

**Associate Professor:** Nancy Ciccone

**Office:** 1061 9th St. Park, Room 100

**E-mail:** nancy.ciccone@ucdenver.edu

**Phone:** 303-315-7833

### **Required Courses**

- ENGL 5100 - Introduction to Graduate Studies
- ENGL 5145 - Theory (Literary and Rhetorical Theory)

- ENGL 5155 - Genres of Writing

## **Electives**

Choose 3 graduate level Literature or Film courses

# **TEACHING ENGLISH LANGUAGE LEARNERS GRADUATE CERTIFICATE (CTELL)**

► Graduate School Policies and Procedures apply to this program.

**Program Advisor:** Joanne Addison, Professor

**Office:** 1059 Ninth Street Park, Room 104

**Telephone:** 303-315-7000

**E-mail:** Joanne.Addison@ucdenver.edu

## **Program Description**

To meet the increasing needs of individuals seeking advanced training in teaching English as a second language, the English department at CU Denver offers a graduate Certificate in Teaching English Language Learners (CTELL).

The certificate program, which can be completed through CU Online, is designed to build the necessary skills to teach adults English as a second language through focused preparation. It is primarily aimed at native speakers of English who want to teach overseas, but may serve the needs of international students wanting to teach English in their home country or other countries.

Upon successful completion of the program, CTELL participants will be able to:

- Discuss the theoretical basis of second language instruction
- Demonstrate a variety of effective ESL teaching techniques
- Explain, in pedagogically relevant ways, the linguistic structures of the English language



## Curriculum

1. Students must complete a minimum of 12 ENGL credit hours
2. Students must complete all 12 ENGL credits at the graduate (5000 or above) level.
3. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All credits for the certificate must be completed with CU Denver faculty.
5. All courses must be completed with ENGL subject code.
6. All candidates must possess a Bachelor's of Arts in any field.

## Required Courses

- ENGL 5171 - Language Theory
- ENGL 5601 - Principles and Practices of Second Language Acquisition
- ENGL 5651 - Second Language Writing

**Total: 9 Hours**

## Elective Courses (Choose one of the following)

- ENGL 5093 - Teaching of Writing
- An alternative elective such as a special topic course (i.e., ENGL 5190 Advanced Topics in Writing & Digital Studies ) approved by the program advisor.
- An internship (ENGL 5939 Internship ) approved by the program advisor.

**Total: 3 Hours**

**Total: 12 Hours**

## Additional Information

### LENGTH OF TIME

The course of study will typically last one academic year, including the summer session.

### WHEN YOU MAY BEGIN

You may begin in any semester. There is no fixed deadline for application for admission.

## **PREREQUISITES**

All applicants must have a bachelor's degree or the equivalent, with a 3.0 GPA, to be accepted to the program. Graduate students at CU Denver will also be permitted to apply for the certificate while they are concurrently completing another graduate degree. Permission may not be granted to graduate students in the applied linguistics option of the Master of Arts in English program.

Non-native speakers of English are required to submit an official TOEFL (Test of English as a Foreign Language) report showing a score of at least 600. Those who score below 600 but above 500 on the TOEFL may be admitted conditionally to the program. Under these conditions, students will have their English language skills assessed by the faculty of the program immediately after they arrive on campus to determine whether further courses are needed to develop English language proficiency. After assessment, the students may be assigned to full-time language study in an intensive English program, permitted to take graduate-level classes on a conditional basis along with further designated language study or permitted to begin graduate study without further restrictions.

### **Master of Arts**

# **ENGLISH MA**

► Graduate School Policies and Procedures apply to this program

**Program Director:** Nancy Ciccone

**Telephone:** 303-315-7833

**E-mail:** nancy.ciccone@ucdenver.edu

The department offers an English MA degree focused around five core courses with specializations available in literature, rhetoric and the teaching of writing, and applied linguistics.

Contact the graduate program director for more information on these programs.

## **Requirements for Admission**

The deadline for summer or fall admission is April 1; the deadline for spring is October 1. Complete applications must include the following:

- A completed University of Colorado graduate application

- One copy of all graduate and undergraduate transcripts, and for any nondegree courses previously taken
- Three letters of recommendation in which the recommender specifically addresses the candidate's ability to pursue successfully the program chosen
- Graduate Record Exam scores are optional. You may provide them if you wish, but they are no longer required.
- Evidence of a 3.0 GPA in previous courses
- A one-page statement of purpose
- 10-page critical writing sample

In addition to these requirements, applicants for the program must have successfully completed 24 semester hours in English courses (graduate or undergraduate), excluding courses in composition, creative writing or speech. At least 15 of these semester hours must be at the upper-division level.

## **Transfer of Credits from Other CU Campuses**

Students admitted to graduate study in English may complete all of their course requirements for the MA degree at CU Denver. Up to 9 semester hours (total) may be transferred from the University of Colorado Boulder, University of Colorado Colorado Springs or other graduate programs; however, such transfer requires the written approval of the graduate advisor. Only 9 semester hours of courses taken at CU Denver before acceptance into the program can be counted toward the degree. Further, work already applied toward a graduate degree received at the University of Colorado or at another institution cannot be transferred toward another graduate degree of the same level at CU Denver. (For other rules concerning transfer of graduate credits, see the Graduate School Policies and Procedures) For more information, contact the graduate program director at 303-315-7847.

## **Degree Requirements**

### **GENERAL REQUIREMENTS**

- Satisfactory completion of all required course work
- Demonstrated fourth-semester proficiency in a foreign language. Old English or Latin will also satisfy this requirement
- Compliance with all graduate school policies and requirements

### **COURSE REQUIREMENTS (30 SEMESTER HOURS MINIMUM)**

1. Students must complete a minimum of 30 ENGL credit hours.
2. Students must complete all courses at the graduate (5000 and above) level.
3. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded

attempts in required and elective courses are calculated in the major GPA.

Students cannot complete major or ancillary course requirements as pass/fail.

4. Students must complete a minimum of 21 ENGL credits with CU Denver faculty,
5. All courses are 3 credit hours unless otherwise noted.
6. All courses must be completed in the ENGL subject code.

## REQUIRED COURSES

- ENGL 5100 - Introduction to Graduate Studies
- ENGL 5135 - English Language Study
- ENGL 5145 - Theory (Literary and Rhetorical Theory)
- ENGL 5155 - Genres of Writing
- ENGL 5165 - Literacy and Technology

**Total: 15 Hours**

## AREA REQUIREMENTS

Students may choose to concentrate 12 hours of English graduate courses in a particular area of study that meets the student's goals in the program.

**Total: 12 Hours**

## THESIS OR PORTFOLIO OPTIONS

- ENGL 6950 - Master's Thesis

*Students must consult with and submit a proposal to the graduate committee for approval. (4-6 credit hours)*

**OR take**

- ENGL 6970 - Portfolio Exam

(3 hours)

**Total: 3-6 Hours**

## Additional Information

**Candidate for Degree:** Graduate students must be registered for at least one credit hour during the semester that they graduate. Those who have completed all required courses and requirements may register for Candidate for Degree: CAND 5940 section 900.

**Teaching Assistantships:** Graduate students who receive a teaching assistantship must take

ENGL 5913 - Practicum in Language and Rhetoric in the fall during their first semester as a teaching assistant. ENGL 5913 may also be counted as an elective.

**Independent Study:** Graduate students may only count 6 credit hours of Independent Study toward the English MA degree.

# GEOGRAPHY AND ENVIRONMENTAL SCIENCES

**Chair:** Peter Anthamatten, PhD

**Program Assistant:** Sue Eddleman

**Administrative Assistant:** Meron Ayele

**Office:** North Classroom, 3016

**Telephone:** 303-315-7525

**Fax:** 303-315-7526

**Website:** [clas.ucdenver.edu/ges/](http://clas.ucdenver.edu/ges/)

## Faculty

### Professors:

Anne Chin, PhD, Arizona State University

Pamela Jansma, PhD, Northwestern University (CLAS Dean)

### Professors Emeritus:

Wesley E. LeMasurier, PhD, Stanford University

Martin Lockley, PhD, University of Birmingham, England

John W. Wyckoff, PhD, University of Utah

### Associate Professors:

Peter Anthamatten, PhD, University of Minnesota

Frederick B. Chambers, PhD, Arizona State University

Rafael Moreno-Sanchez, PhD, Colorado State University

Brian Page, PhD, University of California, Berkeley

Gregory Simon, PhD, University of Washington

Bryan S. Wee, PhD, Purdue University

### Associate Professors- Clinical Teaching Track:

Rudi Hartmann, PhD, Technical University of Munich

### Assistant Professors- Clinical Teaching Track:

Matthew Cross, PhD, University of Colorado Denver

**Assistant Professors:**

Christy Briles, PhD, University of Oregon

Benjamin Crawford, PhD, University of British Columbia, Vancouver

Katharine Kelsey, PhD, University of Colorado Boulder

**Senior Instructors:**

Amanda Weaver, PhD, University of Denver

Thomas Duster, PhD, University of Notre Dame

**Instructors:**

Kirsten Christensen, MSS, MURP, University of Colorado Denver

Yi-Chia Chen, PhD, Louisiana State University

**Lecturers:**

Richard Ashmore

Tim Connors

Hope Dalton

Richard DeGrandchamp

James Fleming

Jenne Mayne

David Murray

Xuantong Wang

Geography is a science that focuses on the spatial analysis of human/physical patterns and processes. Geographers attempt to identify the factors affecting the distribution of people and their activities on the surface of the earth and to provide meaningful solutions to problems faced by societies. This discipline is an ideal major for the liberal arts student, providing exposure to the concepts and techniques utilized in investigating the physical sciences, environmental and sustainability issues, socioeconomic problems and planning policies. In the United States and around the world, balancing the preservation of the natural environment with the imperatives of economic development along with concerns for social well-being has led to a growing demand for broadly trained individuals who can identify and understand pressing social and environmental issues, collect and analyze relevant data, and develop and implement innovative solutions.

Environmental Sciences is a multidisciplinary study of the environment, housed in the Department of Geography and Environmental Sciences. Academic fields involved in environmental sciences include chemistry, biology and ecology, physics, geology, geography, anthropology, engineering, political science, law, economics and the health sciences. Students planning to pursue the MS in environmental sciences must either have earned a bachelor's degree or have taken significant coursework in the natural/physical sciences or engineering and completed several other prerequisites (see the following graduate information). Graduate-level certificates in environmental

sciences are also offered. The certificates may be earned stand-alone or as options in the MS in environmental sciences.

Environmental careers encompass a broad range of professions, from those with a strong foundation in the natural/physical sciences or engineering to those based in the social sciences and/or humanities. Students interested in environmental issues and careers should investigate the whole field before deciding which course to follow. At CU Denver, the MS in environmental sciences emphasizes the natural/physical sciences and engineering with the addition of the social sciences and humanities.

## **Graduate Program**

Click here to learn about the **Master of Science in Environmental Sciences**.

Click here to learn about the **Master of Arts in Applied Geography & Geospatial Science**.

## **Certificates**

Click here to learn about the **Sustainable Urban Agriculture Graduate Certificate**.

Click here to learn about the **Geographic Information Science Graduate Certificate**.

Click here to learn about the **Environmental Science Education Graduate Certificate**.

## **Programs**

### **Certificate**

# **ENVIRONMENTAL SCIENCE EDUCATION GRADUATE CERTIFICATE**

► Graduate School Policies and Procedures apply to this program.

**Certificate Advisor:** Bryan Wee

**E-mail:** [bryan.wee@ucdenver.edu](mailto:bryan.wee@ucdenver.edu)

### **Introduction**

Please click here to see Geography and Environmental Sciences Department information.

## **Certificate Objectives**

1. Students will synthesize environmental science content with relevant educational practices
2. Students will recognize, understand and apply environmental science education in either formal or informal educational settings
3. Students will utilize education research methods to support disciplinary learning
4. Students will identify a broader set of career options (see list below)

### *Sample list of career options*

- K-12 Teacher or curricular specialist
- UNICEF/UNESCO/World Heritage Foundation
- National Parks Service or U.S. Forest Service
- Non-profit organizations (e.g. Colorado Alliance for Environmental Education)
- Regulatory Agencies (e.g. U.S. Environmental Protection Agency)
- Environmental and/or Educational Consultancy Firms
- Adjunct lecturer or instructor

## **Program Delivery**

This is both an on-campus and field-based program.

## **Declaring This Certificate**

Please see the Certificate advisor.

## **General Requirements**

[Click here](#) for information about Academic Policies.

## **Eligibility**

Environmental Science Education has broad applications across many disciplines. Students who already hold a bachelor's degree from CU Denver or other institutions in any major may be admitted as a CU Denver graduate student or a non-degree-seeking student, depending on enrollment status.

## **Current CU Denver Students**

A student may begin the program in any semester or during the summer by making arrangements with the Certificate advisor. This should be done as soon as you have decided to pursue the certificate, and no later than the semester previous to completion of all the courses required to obtain the certificate.

## **Former CU Denver Students or Graduates of Other Universities**



In order to start the certificate program, you will need to apply to the university as a non-degree seeking student if you are not already enrolled in a graduate program within CU Denver. Once accepted, you will be able to enroll in all of the appropriate classes.

*Admissions:* <http://www.ucdenver.edu/admissions/non-degree/Pages/default.aspx>.

Specific questions about enrollment or tuition should be addressed directly to the University Registrar's Office or Bursar's Office.

## **PROGRAM EXPECTATIONS**

Because a certificate is a CU Denver certification of a students' specialized knowledge in an advanced subject matter, all courses in a certificate program are expected to be taken in residency at CU Denver. Only in rare circumstances will exceptions be made regarding this policy. Courses taken within the Environmental Science Education Certificate may be used towards one other degree requirement. Any changes to the standard curriculum program must be approved in writing by the Certificate advisor. Please pay close attention to prerequisites for specific courses.

## **PERFORMANCE EXPECTATIONS**

Students must earn a 3.0 GPA average with no course below a "B-" in all approved courses for the certificate. For graduate and non-degree seeking students, the certificate will be awarded upon completion of the program and be added to the student's transcript.

### **Certificate Requirements**

As a graduate or non-degree student at CU Denver, the requirements for the Environmental Science Education Certificate are two core classes and two electives, totaling 12 hours. All classes must be taken at the graduate level (5000 or above) to fulfill the requirements of the Certificate.

### **Required Courses (6 credit hours)**

- ENVS 5340 - Equity & Culture in Science Education: Local/Global
- ENVS 5650 - Environmental Education

### **Electives (6 credit hours)**

Select from the following list of electives. Students should consult with the certificate advisor about other courses that may count toward this requirement.

- ANTH 5170 - Culture and the Environment
- BIOL 5154 - Conservation Biology
- COMM 5282 - Environmental Communication

- ENVS 5020 - Earth Environments and Human Impacts
- ENVS 5305 - Water Quality and Resources
- ENVS 5470 - Sustainable Urban Agriculture Field Study II
- GEOG 5265 - Sustainability in Resources Management
- GEOG 5335 - Contemporary Environmental Issues
- GEOG 5440 - Science, Policy and the Environment
- PSCI 5354 - Seminar: Environmental Politics and Policy

# FREE AND OPEN SOURCE SOFTWARE FOR GEOSPATIAL APPLICATIONS GRADUATE CERTIFICATE

Graduate School Policies and Procedures apply to this program

**Certificate Advisor:** Rafael Moreno

**E-mail:** rafael.moreno@ucdenver.edu

**Certificate Objectives:**

1. Provide students and working geospatial professionals with the knowledge and skills for the effective use and development of FOSS4G solutions in diverse application contexts. This complements and enhances the knowledge and skills they have in the use of geospatial proprietary software solutions.
2. Students will be exposed to several FOSS4G alternatives to address the needs of a geospatial information infrastructure from desktop, database management systems, systems automation/customization, all the way to Web/Cloud-based applications and enterprise level solutions.
3. Students will acquire the necessary knowledge and skills to effectively use the most advanced FOSS4G alternatives to develop solutions for each of levels of a geospatial information infrastructure previously mentioned.
4. Students will have the knowledge and hands-on skills that will enable them to design and develop hybrid geospatial information infrastructures that make use of proprietary software and FOSS4G incorporating each them in a combination that maximizes efficiency of the end infrastructure.

**Current CU Denver Students**

A student may begin the program in any semester or during the summer by making arrangements with the GISci Certificate Coordinator. This should be done as soon as you have decided to pursue the certificate, and no later than the semester previous to completion of all the courses required to obtain the certificate.

### **Former CU Denver Students or Graduates of Other Universities**

In order to start the certificate program, you will need to apply to the university as a non-degree seeking student if you are not already enrolled in a graduate program within CU Denver. Once accepted, you will be able to enroll in all of the appropriate classes.

*Admissions: <http://www.ucdenver.edu/admissions/non-degree/Pages/default.aspx>.*

Specific questions about enrollment or tuition should be addressed directly to the University Registrar's Office or Bursar's Office.

### **PERFORMANCE EXPECTATIONS**

Students must earn a 3.0 GPA average with no course below a "B-" in all approved courses for the certificate. For graduate and non-degree seeking students, the certificate will be awarded upon completion of the program and be added to the student's transcript.

#### **Credit hour requirements:**

A total of 12 credits are required for the certificate. The students will have the option to take other courses above and beyond the core requirements for the certificate.

#### **Required Courses**

- GEOG 5091 - Open Source Software for Geospatial Applications

*This course exposes students to the diversity of FOSS4G solutions that exist for each of the elements of geospatial information infrastructure. They acquire the necessary hands-on skills to effectively use one FOSS4G to address the needs of each of the levels of a geospatial information infrastructure.*

- GEOG 5092 - GIS Programming and Automation

*Students learn programming principles and techniques to automate processes and customize a geographic information system (GIS), and to integrate and coordinate the functions of diverse geospatial software (e.g. a database management system with a GIS).*

- CVEN 5385 - GIS Relational Database Systems

*Students learn the principles and techniques to design a spatial database and perform multiple analyses and functions in a FOSS4G spatial database management system.*

- GEOG 5086 - FOSS4G Systems Integration

*This course functions as the capstone for the certificate. It concentrates on applying all the knowledge and skills previously obtained and adding more in the area of integration of geospatial information infrastructures based on FOSS4G. Students work on integrating systems from desktop to Web/Cloud-based applications.*

### **Optional Courses**

Students can choose to take one or more of the following courses that can complement their formation in specific topics. However, these course are not required as part of the certificate program.

- BIOL 3763 - Biostatistics
- BIOL 6764 - Biological Data Analysis

Both of these courses use the open source software R for environmental data analysis including spatial statistics and geostatistics.

- CVEN 5389 - Open Source Desktop Mapping, Modeling & Data Processing

*This course uses different FOSS4G for the creation of Web-based mapping solutions.*

- GEOG 5050 - Applied Spatial Statistics

*This course is offered annually as part of the GES offerings. It also uses R for data analysis including spatial statistics and geostatistics.*

- GEOG 5095 - Deploying GIS Functionality on the Web

*This course uses FOSS4G for database analysis and creation of Web-based GIS systems.*

# GEOGRAPHIC INFORMATION SCIENCE GRADUATE CERTIFICATE

► Graduate School Policies and Procedures apply to this program.

**GISci Certificate Advisor:** Matt Cross

**E-mail:** matthew.cross@ucdenver.edu

The Geographic Information Science (GISci) Certificate in the Department of Geography and Environmental Sciences is designed to provide CU Denver undergraduates and graduates, as well as non-degree seeking students interested in professional development, with proficiency in the application of spatial thinking, geographic information science, and geo-technologies in the social and physical sciences, spanning the natural, built and human environments and emphasizing human-environment interconnections. The GISci Certificate core establishes a broad foundation in spatial technologies and methodologies, including geographic information systems, remote sensing, cartography, spatial extensions to database management systems, and statistics. From this base, students can delve into various specialization areas depending on their interests.

Upon successful completion of the certificate, students will be able to:

- articulate and apply basic theoretical underpinnings of spatial analytical principles, methodologies, and techniques;
- effectively utilize at least three different types of software used for spatial analysis;
- apply geo-spatial thinking, geographic information science, and geo-technologies appropriately; and
- analyze diverse real-world problems that have a spatial dimension and develop alternative solutions to them.

## **Eligibility**

Geographic information science and geo-technologies have broad applications across many disciplines. Students who already hold a bachelor's degree from CU Denver or other institutions in any major may be admitted as a CU Denver graduate student or a non-degree-seeking student, depending on enrollment status.

You must complete the Application for GISci Certificate, which can be obtained from the GISci Certificate Coordinator. The application requires copies of former transcripts indicating that an undergraduate degree has been previously granted or an unofficial transcript from CU Denver showing that you are a current undergraduate or graduate student. This application is required to be formally registered in the GISci Certificate program, and must be completed no later than the semester prior to the scheduled completion of the certificate.

### **Current CU Denver Students**

A student may begin the program in any semester or during the summer by making arrangements with the GISci Certificate Coordinator. This should be done as soon as you have decided to pursue the certificate, and no later than the semester previous to completion of all the courses required to obtain the certificate.

### **Former CU Denver Students or Graduates of Other Universities**

In order to start the certificate program, you will need to apply to the university as a non-degree seeking student if you are not already enrolled in a graduate program within CU Denver. Once accepted, you will be able to enroll in all of the appropriate classes.

*Admissions: <http://www.ucdenver.edu/admissions/non-degree/Pages/default.aspx>.*

Specific questions about enrollment or tuition should be addressed directly to the University Registrar's Office or Bursar's Office.

## **PROGRAM EXPECTATIONS**

To earn the certificate, students must complete a specific set of geospatial classes. Because a certificate is a CU Denver certification of a students' specialized knowledge in an advanced subject matter, all courses in a certificate program are expected to be taken in residency at CU Denver. Only in rare circumstances will exceptions be made regarding this policy. Courses taken within the GISci Certificate Program may be used towards one other degree requirement. Any changes to the standard curriculum program must be approved in writing by the GISci Certificate Coordinator. Please pay close attention to prerequisites for specific courses.

## **PERFORMANCE EXPECTATIONS**

Students must earn a 3.0 GPA average with no course below a "B-" in all approved courses for the certificate. For graduate and non-degree seeking students, the certificate will be awarded upon completion of the program and be added to the student's transcript.

### **Course Requirements**

As a graduate or graduate-non-degree student at CU Denver, the requirements for the GISci Certificate are four core classes and two electives, totaling 18 hours. All classes must be taken at the graduate level (5000 or above) to fulfill the requirements of the Graduate GISci Certificate. It is assumed that graduate students have some prior knowledge in basic mapping skills, therefore GEOG 2080 is not required. All core classes are required for completion of the GIS Certificate and are offered at least on a yearly basis. The statistics course requirement can be filled by enrolling in the GEOG 5050 Applied Spatial Statistics, or one of several graduate level (5000 or above) classes offered by CU Denver and approved by the certificate coordinator. There is a prerequisite requirement of a basic statistics class taken at the undergraduate college level prior to taking any graduate level statistics class at CU Denver. Any additional two electives can be taken from the elective list. If you are currently a graduate student at CU Denver and also attended CU Denver as an undergraduate, you may apply only one 3 credit hour undergraduate course (4000 level) to the GISci Certificate. The required classes are as follows:

### **Prerequisite Course**

Note: this course does NOT count as part of the total credits required for the certificate.

- GEOG 2080 - Introduction to Mapping and Map Analysis

### **Core Courses**

- GEOG 5050 - Applied Spatial Statistics
- GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing

(May also take as GEOL 5060)

- GEOG 5080 - Introduction to GIS
- GEOG 5081 - Cartography and Computer Mapping

**OR** equivalent course approved by the GISci Certificate Coordinator

### **Total: 12 Hours**

### **Elective (choose two from the following):**

- GEOG 4086 - FOSS4G Systems Integration
- GEOG 5070 - Remote Sensing II: Advanced Remote Sensing

(May also take as GEOL 5070)

- GEOG 5085 - GIS Applications for the Urban Environment
- GEOG 5090 - Environmental Modeling with Geographic Information Systems
- GEOG 5091 - Open Source Software for Geospatial Applications

- GEOG 5092 - GIS Programming and Automation
- GEOG 5095 - Deploying GIS Functionality on the Web
- GEOG 5235 - GIS Applications in the Health Sciences
- CVEN 5382 - Geospatial Data Development
- CVEN 5385 - GIS Relational Database Systems

One of these courses may be substituted with an elective approved by the GISci Certificate Coordinator

**Total: 6 Hours**

**Certificate Total: 18 Hours**

# SUSTAINABLE URBAN AGRICULTURE GRADUATE CERTIFICATE

**Certificate Advisor:** Amanda Weaver

**E-mail:** amanda.weaver@ucdenver.edu

## **Introduction**

Please click [here](#) to see Geography and Environmental Sciences Department information.

The goal of the certificate program is to provide GES students advanced training in sustainable urban agriculture through the integration of university classroom study and field-based practicum conducted at the department's field research station. Requirements for the certificate are therefore divided between on-campus courses and field courses.

Upon successful completion of the certificate, students will:

- Have knowledge of the history of urban farming
- Understand the modern agro-food system
- Participate in sustainable urban agricultural practices

## **Program Delivery**

This is both an on-campus and field-based program.



## **Declaring This Certificate**

- Please see the Certificate advisor.

## **General Requirements**

- Click here for information about Academic Policies.

## **Eligibility**

Sustainable Urban Agriculture has broad applications across many disciplines. Students who already hold a bachelor's degree from CU Denver or other institutions in any major may be admitted as a CU Denver graduate student or a non-degree-seeking student, depending on enrollment status.

## **Current CU Denver Students**

A student may begin the program in any semester or during the summer by making arrangements with the Certificate advisor. This should be done as soon as you have decided to pursue the certificate, and no later than the semester previous to completion of all the courses required to obtain the certificate.

## **Former CU Denver Students or Graduates of Other Universities**

In order to start the certificate program, you will need to apply to the university as a non-degree seeking student if you are not already enrolled in a graduate program within CU Denver. Once accepted, you will be able to enroll in all of the appropriate classes.

*Admissions: <http://www.ucdenver.edu/admissions/non-degree/Pages/default.aspx>.*

Specific questions about enrollment or tuition should be addressed directly to the University Registrar's Office or Bursar's Office.

## **PERFORMANCE EXPECTATIONS**

For graduate and non-degree seeking students, the certificate will be awarded upon completion of the program and be added to the student's transcript.

## **Certificate Requirements**

1. Students must complete a minimum of 12 hours taken from the approved courses below.
2. Students must complete all courses at the graduate level (5000 or above) to fulfill the requirements of the certificate.
3. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All

graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.

4. All 12 credit hours for the certificate must be earned at the University of Colorado Denver.

### **Program Restrictions, Allowances and Recommendations**

1. Because a certificate is a CU Denver certification of a students' specialized knowledge in an advanced subject matter, all courses in a certificate program are expected to be taken in residency at CU Denver.
2. Any changes to the standard curriculum program must be approved in writing by the certificate advisor.
3. Courses taken within the Sustainable Urban Agriculture Certificate Program may be used towards one other degree requirement.
4. Please pay close attention to prerequisites for specific courses.

Take **all** of the following courses (9 credit hours):

- ENVS 5450 - Urban Food and Agriculture: Perspectives and Research
- ENVS 5460 - Sustainable Urban Agriculture Field Study I
- ENVS 5470 - Sustainable Urban Agriculture Field Study II

Take **one** of the following elective courses (3 credit hours):

- GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing
- GEOG 5085 - GIS Applications for the Urban Environment
- GEOG 5335 - Contemporary Environmental Issues
- GEOG 5640 - Urban Geography: Denver and the U.S.
- GEOG 5680 - Urban Sustainability: Perspectives and Practice
- GEOG 5939 - Internship (a sustainable agriculture internship with a local food/urban agriculture community organization)

### **Master of Arts**

# APPLIED GEOGRAPHY & GEOSPATIAL SCIENCE MA

► Graduate School Policies and Procedures apply to this program

**Program Director:** Gregory Simon

**Office:** North Classroom

**Fax:** 303.315-7526

**E-mail:** gregory.simon@ucdenver.edu

**Web site:** Applied Geography & Geospatial Science MA

## Introduction

In the United States and around the world, balancing the preservation of the natural environment with the imperatives of economic development along with concerns for social well-being has led to a growing demand for broadly trained individuals who can identify and understand pressing social and environmental issues, collect and analyze relevant data, and develop and implement innovative solutions. Graduates of the M.A program in Applied Geography and Geospatial Science will have the knowledge, training, and tools to become leaders in this rapidly growing field.

The program's research focus is human-environment interaction, a longstanding hallmark of the discipline of Geography. Within this area of critical geographic inquiry, the program emphasizes geospatial science, a federally recognized STEM subject area that includes geographic information systems (GIS) as well as computer cartography, remotely sensed image analysis, and spatial statistics. Students apply their geospatial research skills in the context of hands-on, faculty-led research projects that stress professional development through community engagement and interactive service learning.

## Requirements for Admission

Applicants must hold a Bachelor's degree from an accredited institution.

The University of Colorado Denver has a minimum requirement of 3.0 undergraduate grade point average (GPA) for applicants to the Graduate School. The number of applicants admitted to the MA in Applied Geography & Geospatial Science in any year depends, in part, on space availability. The program is competitive, and we generally discourage applicants whose undergraduate GPA is below 3.0. Notification of acceptance or refusal for admission into the program is mailed to the applicant approximately six weeks after the deadline for submission of applications.

## Application Process

We accept applications once per year, **before or on February 1st**, for admission in the following fall. As part of the admission review process, applicants are required to submit: a graduate application, statement of purpose that articulates the goals of pursuing a graduate degree in this program, a writing sample, a minimum of three letters of recommendation (academic references are preferred), and official transcripts from all institutions previously attended. The GRE is not required. However, applicants

with less than a 3.0 GPA are welcome to submit GRE scores as further evidence of their qualifications.

## **Financial Aid**

There are three types of financial aid available: teaching assistant student hourly positions; research assistantship positions funded by grants to specific program faculty; and the regular package of financial aid (primarily loans) available through the financial aid office on the Denver campus. Incoming students will be automatically considered for program-distributed assistance at the time of admission to the program. Continuing students will be regularly apprised of available aid and positions. All other aid should be requested through the CU Denver Financial Aid Office, Student Commons Building, 5th floor, Campus Box 125, P.O. Box 173364, Denver, CO 80217-3364. Telephone: 303-315-1850.

## **Internships**

Students in the Applied Geography & Geospatial Science MA program are strongly encouraged to contact the Experiential Learning Center for internships and paid positions related to geographical sciences. The Experiential Learning Center is located in the Tivoli Student Union, Suite 260. Telephone: 303-556-2250. Many students have had internships in federal agencies, such as the U.S. Environmental Protection Agency and the U.S. Geological Survey.

## **Degree Requirements**

The program is offered by the faculty of the Department of Geography and Environmental Sciences in the College of Liberal Arts and Sciences. Students undertake 36 credit hours over a two-year period. These 36 hours include required core classes (6-9 credit hours), a required service learning studio (3 credit hours), and required geo-spatial science coursework (12 credit hours). Students can elect to undertake either of two tracks: the first “coursework” track involves a further 15 hours of elective courses, whereas the second “thesis” track involves 9 hours of electives, and preparation of a written thesis (3 credits).

## **Thesis Option**

Take **all** of the following:

- GEOG 5050 - Applied Spatial Statistics
- GEOG 6300 - Foundations Seminar in Human-Environmental Interaction (3 hours)
- GEOG 6750 - Research Design (3 hours)
- GEOG 6800 - Community-Based Research Practicum (3 hours)

Take 12 additional hours of Geospatial Science courses

Take 9 hours of Elective courses (up to 6 hours can be taken outside the Department of Geography & Environmental Sciences, as approved by advisor)

- GEOG 6950 - Master's Thesis (3 hours)

33 hours of coursework and 3 thesis hours

## **Non-thesis Option**

- GEOG 6300 - Foundations Seminar in Human-Environmental Interaction (3 hours)

Take **all** of the following:

- GEOG 5050 - Applied Spatial Statistics
- GEOG 6800 - Community-Based Research Practicum (3 hours)

Take 12 hours of Geospatial Science courses

Take 15 hours of Elective courses (up to 6 hours can be taken outside the Department of Geography & Environmental Sciences, as approved by advisor)

36 hours of coursework

## **Notes**

1. Many of the electives have pre-requisites; students must have met these requirements in order to take the course.
2. Courses applied to either a certificate\* or an MA degree may later be applied toward the other if all pertinent coursework is completed within a five- year time period.
3. Students should fill out and submit all relevant department forms for their files. Importantly, all petitions for course substitutions and identification of where courses fit as electives, with the subsequent approval/denial, should be submitted to this file.
4. By the end of the first semester, each student should identify and declare whether or not s/he is pursuing the thesis or non-thesis option. If intending to pursue the thesis option, the student should identify and gain agreement from a content advisor for guiding the thesis, filling out and submitting the appropriate departmental form.
5. Many of the electives have pre-requisites; students must have met these requirements in order to take the course.

6. Students may transfer up to 9 hours of approved graduate-level credit into the program. These courses must be approved by the Graduate Director and they may not replace core courses.
7. Students may count up to 6-credit hours of independent, with a maximum of 3-credit hours per independent study towards elective credit in the major as approved by the Graduate Director. No more than 3 credit hours of independent study may be taken with the same instructor and they may not be taken in the same term.
8. Students may count up to 6-credit hours of internship in total, but 3-credit hours per internship and per entity (sponsorship may be with same professor sponsor)
9. Students may not count 4000-level courses towards electives in the program; this may be petitioned to the Graduate Committee in exceptional cases.
10. Students may take a maximum of 2 online courses, or petition to the GES Graduate Committee beyond two.
11. Students may enroll in thesis preparation and writing hours only after submission of signed committee form, which requires approval of the thesis proposal.
12. Students will not receive a grade for thesis preparation and writing hours until the thesis is successfully defended.
13. Students must follow the graduate school deadlines for submission of paperwork for the graduation application, comprehensive exam, and any other deadlines. Links to these can be found on the GES/MS website.
14. Work submitted for the environmental sciences options must have a grade of B (3.0) or better.

\* GES offers Geospatial, Environmental Education, and Urban Agriculture independent graduate certificates. These certificates may be earned without entrance into the MS in environmental sciences program. (See the Geographic Information Science Graduate Certificate , Sustainable Urban Agriculture Graduate Certificate , and Environmental Science Education Graduate Certificate descriptions.)

## **Master of Science**

# **ENVIRONMENTAL SCIENCES MS**

- ▶ Graduate School Policies and Procedures apply to this program

**Program Director:** Gregory Simon

**Office:** North Classroom

**Fax:** 303-315-7526

**E-mail:** gregory.simon@ucdenver.edu

**Web site:** MS in Environmental Sciences website

## **Core Faculty of the M.S. in Environmental Sciences Program**

### **Professors:**

Anne Chin, Geography and Environmental Science

Pamela Jansma, Geography and Environmental Science

### **Associate Professors:**

Peter Anthamatten, Geography and Environmental Science

Frederick B. Chambers, Geography and Environmental Science

Rafael Moreno-Sanchez, Geography and Environmental Science

Brian Page, Geography and Environmental Science

Gregory Simon, Geography and Environmental Science

Brian S. Wee, Geography and Environmental Science

### **Assistant Professors:**

Christy Briles, Geography and Environmental Science

Benjamin Crawford, Geography and Environmental Science

Katharine Kelsey, Geography and Environmental Science

### **Senior Instructors:**

Thomas Duster, Geography and Environmental Science

Amanda Weaver, Geography and Environmental Science

### **Instructors:**

Kirsten Christensen, Geography and Environmental Science

Matthew Cross, Geography and Environmental Science

**Lecturers:**

Richard DeGrandchamp, Geography and Environmental Science

**Faculty Affiliates to the M.S. in Environmental Sciences Program**

**Professors:**

N. Y. Chang, Civil Engineering

Diana F. Tomback, Integrative Biology

**Associate Professors:**

Leo P. Bruederle, Integrative Biology

Greg Cronin, Integrative Biology

Michael J. Green, Integrative Biology

Timberly M. Roane, Integrative Biology

Michael Wunder, Integrative Biology

**Assistant Professors:**

Annika Mosier, Integrative Biology

Alan Vajda, Integrative Biology

Environmental Sciences is a multidisciplinary study of the natural/physical environment. Academic fields involved in environmental sciences include chemistry, biology and ecology, physics, geology, geography, anthropology, engineering, political science, law, economics and the health sciences. Students planning to pursue the MS in Environmental Sciences must either have earned a bachelor's degree or have taken significant course work in the natural/physical sciences or engineering and completed several other prerequisites (see the following graduate information).

Environmental careers encompass a broad range of professions, from those with a strong foundation in the natural/physical sciences or engineering to those based in the social sciences and/or humanities. Students interested in environmental issues and careers should investigate the whole field before deciding which path to follow. At CU



Denver, the MS in Environmental Sciences emphasizes the natural/physical sciences and engineering with the addition of the social sciences and humanities.

The MS in Environmental Sciences degree is designed to provide training in engineering, natural/physical sciences and social sciences. The goals of the program are (1) to enhance the interdisciplinary communication and analytical skills of the student, and (2) to provide a multidisciplinary approach for more intensive study of a particular environmental issue. Students will receive instruction in the physical and biological dynamics of various ecosystems, environmental engineering and socioeconomic issues associated with environmental analysis.

Graduates of the MS in Environmental Sciences program are involved in many different areas, such as reviewing environmental impact statements, monitoring groundwater quality and communicating with the public. Many students have found employment in various agencies (U.S. Environmental Protection Agency, U.S. Geological Survey, Colorado State Department of Public Health and Environment) and private-sector environmental and engineering firms.

## Requirements for Admission

The program is for students who either have baccalaureate degrees or have a significant background in one of the natural/physical sciences or engineering. In addition, minimum undergraduate science and math requirements are:

- one semester of calculus and one semester of upper-division statistics (*if applicant is missing the statistics course, he/she can be admitted but must take ENV5 5600, Applied Statistics, or an approved statistics course as an elective before receiving the MS in Environmental Sciences degree*)
- either two semesters of general chemistry with lab or two semesters of general biology with lab
- one semester of physics

If only two semesters of the prerequisite courses are lacking, students may be admitted, but must take them in the first year in the program. Applicants who have fulfilled all prerequisites have a better chance of acceptance. Applicants may be required to take additional prerequisite courses (necessary for completing particular core or elective courses). The prerequisite courses will not count toward the MS in environmental sciences degree. As part of the admission review process, applicants are required to submit a graduate application, a minimum of three letters of recommendation and transcripts from all institutions previously attended. CU Denver has a minimum requirement of a 3.0 undergraduate GPA for applicants to the Graduate School. The program admits new students for the fall semester only, and the number of students admitted to the program depends, in part, on space availability. **Applicants must submit all materials by the February 1st deadline.**

## Financial Aid

There are three types of financial aid available: student hourly teaching assistantship; research assistantship positions funded by grants to specific program faculty; and the regular package of financial aid (primarily loans) available through the financial aid office on the Denver campus. Incoming students will be automatically considered for program-distributed assistance at the time of admission to the program. Continuing students will be regularly apprised of available aid and positions. All other aid should be requested through the CU Denver Financial Aid Office, Student Commons Building 5th floor, Campus Box 125, P.O. Box 173364, Denver, CO 80217-3364. Telephone: 303-315-1850.

## **Internships**

Students in the MS in Environmental Sciences program are strongly encouraged to contact the Experiential Learning Center for internships and paid positions related to environmental sciences. The Experiential Learning Center is located in the Tivoli Student Union, Suite 260. Telephone: 303-556-2250. Many students have had internships in federal agencies, such as the U.S. Environmental Protection Agency and the U.S. Geological Survey.

## **Program Requirements**

The MS in Environmental Sciences is a 39-hour program that provides students with two alternate plans: Plan I requires a thesis, while Plan II is a non-thesis program. General requirements for the program include a set of core courses (9-12 semester hours) and elective courses (24-27 semester hours minimum). Students choosing to complete the thesis option must also complete 3 hours of thesis credit, while those choosing the non-thesis option must complete 3 hours of additional elective coursework.

The degree is offered through the College of Liberal Arts and Sciences with the cooperation of the College of Engineering, Design and Computing. In addition, some courses offered by the College of Architecture and Planning, the School of Public Affairs and the Business School are relevant and applicable to the program.

## **Thesis Option**

Take **all** of the following:

- ENVS 6002 - Research Topics in Environmental Sciences (3 hours)
- ENVS 6100 - Research Topics in Environmental Management (3 hours)

**OR**

- GEOG 6750 - Research Design (3 hours)
- ENVS 6800 - Community-Based Research Practicum (3 hours)

Take 24 hours of elective courses

- GEOG 6950 - Master's Thesis (3 hours)

36 hours of coursework and 3 thesis hours

## **Non-thesis Option**

Take **all** of the following:

- GEOG 5440 - Science, Policy and the Environment

**OR**

- ENVS 6100 - Research Topics in Environmental Management (3 hours)
- ENVS 6002 - Research Topics in Environmental Sciences (3 hours)
- ENVS 6800 - Community-Based Research Practicum (3 hours)

Take 30 hours of elective courses

39 hours of coursework

## **Elective Courses**

(See the MS in Environmental Sciences website for a complete list of elective courses for the MS in Environmental Sciences program.)

Students, with the coordinator and/or an advisor, will complete a program plan that will include 24-30 semester hours of elective requirements that will meet their interests. Students may choose to use four of the electives to fulfill one of the following options offered in environmental sciences: air quality, ecosystems, environmental health, environmental science education, geospatial analysis, hazardous waste or water quality. Students must have the prerequisites for each course and must meet the requirements listed in the notes below. Contact the option advisor for the particular option of interest before starting. Upon graduation, the option will be noted on the student's transcript.

**Following are the requirements for each environmental sciences option:**

### **AIR QUALITY OPTION**

**Option Advisor:** Frederick Chambers

**E-mail:** Frederick.Chambers@ucdenver.edu

## **Required Courses**

- CHEM 5710 - Air Pollution Chemistry
- ENVS 5730 - Air Quality Modeling and Analysis

**Total: 6 Hours**

## **Electives**

Choose two:

- CHEM 5720 - Atmospheric Sampling and Analysis
- CVEN 5800 - Special Topics  
  
(when Air Pollution Control is the topic)
- URPL 6800 - Special Topics: Urban and Regional Planning  
  
(when Air Quality Planning and Policy is the topic)

**Total: 6 Hours**

**Option Total: 12 Hours**

## **ECOSYSTEMS OPTION\***

**Option Advisor:** Christy Briles

**E-mail:** Christy.Briles@ucdenver.edu

## **Required Courses**

- BIOL 5415 - Microbial Ecology
- ENVS 5010 - Landscape Biogeochemistry

**Total: 6 Hours**

## **Electives**

Choose two:

- ENVS 5731 - Mountain Biogeography
- ENVS 6220 - Toxicology (see Note 2)

- BIOL 5050 - Advanced Biology Topics  
(when Seminar in Aquatic Ecology is the topic)
- BIOL 5154 - Conservation Biology
- GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing

**Total: 6 Hours**

**Option Total: 12 Hours**

\* BIOL 5445, Applied Environmental Biology, is required as a prerequisite for the ecosystems option.

### **ENVIRONMENTAL HEALTH OPTION\***

**Option Advisor:** Peter Anthamatten

**E-mail:** Peter.Anthamatten@ucdenver.edu

### **Required Courses**

- ENVS 6220 - Toxicology (See Note 2)  
(fall, even years)
- ENVS 6230 - Environmental Epidemiology  
(spring, even years)

**Total: 6 Hours**

### **Electives**

Choose two:

- ENVS 5500 - Topics in Environmental Sciences (when Ecological Risk Assessment is the topic)  
(See Note 2)
- ENVS 6210 - Human Health and Environmental Pollution  
(spring, odd years)

- GEOG 5710 - Disasters, Climate Change, and Health

**Total: 6 Hours**

**Option Total: 12 Hours**

\* ENVS 6200, Risk Assessment, is required as a prerequisite for the environmental health option.

## **ENVIRONMENTAL SCIENCE EDUCATION OPTION**

**Option Advisor:** Bryan Wee

**E-mail:** bryan.wee@ucdenver.edu

### **Required Courses**

- ENVS 5340 - Equity & Culture in Science Education: Local/Global
- ENVS 5650 - Environmental Education

**Total: 6 Hours**

### **Electives**

Choose two:

- ANTH 5170 - Culture and the Environment
- BIOL 5154 - Conservation Biology
- COMM 5282 - Environmental Communication
- ENVS 5020 - Earth Environments and Human Impacts
- ENVS 5470 - Sustainable Urban Agriculture Field Study II
- GEOG 5265 - Sustainability in Resources Management
- GEOG 5335 - Contemporary Environmental Issues
- GEOG 5440 - Science, Policy and the Environment

**Total: 6 Hours**

**Option Total: 12 Hours**

## **GEOSPATIAL ANALYSIS OPTION\***

**Option Advisor:** Rafael Moreno

**E-mail:** Rafael.Moreno@ucdenver.edu

## **Required Courses**

- GEOG 5080 - Introduction to GIS
- GEOG 5090 - Environmental Modeling with Geographic Information Systems

**Total: 6 Hours**

## **Electives**

Choose two:

- GEOG 5050 - Applied Spatial Statistics
- GEOG 5086 - FOSS4G Systems Integration
- GEOG 5091 - Open Source Software for Geospatial Applications
- GEOG 5092 - GIS Programming and Automation
- CVEN 5382 - Geospatial Data Development
- CVEN 5385 - GIS Relational Database Systems

**Total: 6 Hours**

**Option Total: 12 Hours**

\* GEOG 3080, Introduction to Mapping and Map Analysis, is required as a prerequisite of the geospatial analysis option.

## **SUSTAINABLE URBAN AGRICULTURE OPTION**

**Option Advisor:** Amanda Weaver

**E-mail:** amanda.weaver@ucdenver.edu

## **Required Courses**

- ENVS 5450 - Urban Food and Agriculture: Perspectives and Research
- ENVS 5460 - Sustainable Urban Agriculture Field Study I

**Total: 6 Hours**

## **Electives**

Choose two:

- ENVS 5340 - Equity & Culture in Science Education: Local/Global
- ENVS 5470 - Sustainable Urban Agriculture Field Study II
- GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing

- GEOG 5085 - GIS Applications for the Urban Environment
- GEOG 5235 - GIS Applications in the Health Sciences
- GEOG 5640 - Urban Geography: Denver and the U.S.
- GEOG 5680 - Urban Sustainability: Perspectives and Practice

**Total: 6 Hours**

**Option Total: 12 Hours**

### **WATER SYSTEMS OPTION\***

**Option Advisor:** Anne Chin

**E-mail:** anne.chin@ucdenver.edu

### **Required Courses**

- ENVS 5280 - Environmental Hydrology
- and
- CVEN 5334 - Groundwater Hydrology OR
  - CVEN 5335 - Vadose Zone Hydrology

**Total: 6 Hours**

### **Electives**

Choose two:

- BIOL 5416 - Aquatic Ecology
- ENVS 5410 - Aquatic Chemistry
- CVEN 5333 - Surface Water Hydrology
- CVEN 5336 - Urban Runoff Quality and Quantity Modeling
- CVEN 5393 - Water Resources Development and Management

**Total: 6 Hours**

**Option Total: 12 Hours**

\*CHEM 5700, Environmental Chemistry, or appropriate chemistry background is required as a prerequisite of the water quality option.

**Notes:**



1. Many of the elective courses have prerequisites; student must have met these requirements in order to take the course.
2. One course may not be used for more than one option, even if it is listed in several options. Other courses may be offered that will be acceptable as electives with approval of the option advisor and the director of the program.
3. Courses applied to either a certificate\* or an MS degree may later be applied toward the other if all pertinent coursework is completed within a five- year time period.
4. Students should fill out and submit all relevant department forms for their files. Importantly, all petitions for course substitutions and identification of where courses fit as electives, with the subsequent approval/denial, should be submitted to this file.
5. By the end of the first semester, each student should identify and declare whether or not s/he is pursuing the thesis or non-thesis option. If intending to pursue the thesis option, the student should identify and gain agreement from a content advisor for guiding the thesis, filling out and submitting the appropriate departmental form.
6. Many of the electives have pre-requisites; students must have met these requirements in order to take the course.
7. Students may transfer up to 9 hours of approved graduate-level credit into the program. These courses must be approved by the Graduate Director and they may not replace core courses
8. Students may count up to 6-credit hours of independent, with a maximum of 3-credit hours per independent study towards elective credit in the major as approved by the Graduate Director. No more than 3 credit hours of independent study may be taken with the same instructor and they may not be taken in the same term.
9. Students may count up to 6-credit hours of internship in total, but 3-credit hours per internship and per entity (sponsorship may be with same professor sponsor)
10. Students may not count 4000-level courses towards electives in the program; this may be petitioned to the Graduate Committee in exceptional cases.
11. Students may take a maximum of 2 online courses, or petition to the GES Graduate Committee beyond two.
12. Students may enroll in thesis preparation and writing hours only after submission of signed committee form, which requires approval of the thesis proposal.
13. Students will not receive a grade for thesis preparation and writing hours until the thesis is successfully defended.
14. Students must follow the graduate school deadlines for submission of paperwork for the graduation application, comprehensive exam, and any other deadlines. Links to these can be found on the GES/MS website.
15. Work submitted for the environmental sciences options must have a grade of B (3.0) or better.

\* The Geospatial, Environmental Education, and Urban Agriculture options of the program lead towards independent graduate certificates. These certificates may be earned without entrance into the MS in environmental sciences program. (See the

Geographic Information Science Graduate Certificate , Sustainable Urban Agriculture Graduate Certificate, and Environmental Science Education Graduate Certificate descriptions.)

# HEALTH AND BEHAVIORAL SCIENCES

**Director:** Patrick Krueger

**Program Assistant:** Anne Marie Summers

**Mailing Address:** Program in Health and Behavioral Sciences, Campus Box 188, P.O. Box 173364, Denver, CO 80217-3364

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**E-mail:** [patrick.krueger@ucdenver.edu](mailto:patrick.krueger@ucdenver.edu)

**Website:** [clas.ucdenver.edu/hbsc/](http://clas.ucdenver.edu/hbsc/)

## Faculty

### Professors:

Karen Spencer, PhD, Indiana University

David P. Tracer, PhD, University of Michigan

### Associate Professors:

jimi adams, PhD Ohio State University

Patrick Krueger, PhD, University of Colorado

Meng Li, PhD, Rutgers University

Ronica Rooks, PhD, University of Maryland College Park

Sara Yeatman, PhD, University of Texas Austin

### Assistant Professors:

Jennifer Boylan, PhD, University of Wisconsin-Madison

### Visiting Assistant Professors:

Hyeyoung Oh Nelson, PhD, University of California Los Angeles

Jorge Ivan Ramirez, PhD, Michigan State University

### Professors Emerita:

Debbi Main, PhD, University of Colorado

### Research and Clinical Faculty:

Sharon Devine, PhD, University of Colorado

Jean Scandlyn, PhD, Columbia University

The mission of the health and behavioral sciences (HBSC) program is to apply social science theory and innovative research methods to critically address emerging issues in health. The program trains students to confront issues affecting the health of communities and populations by focusing on social determinants of health and diseases. These determinants can be more influential on population health than the health care system.

The program's overarching framework integrates social, cultural and biomedical perspectives to understand the underpinnings of health and the conditions essential for its creation and maintenance. Students and faculty conduct interdisciplinary research on topics including emerging diseases, maternal/child health, substance abuse, health disparities and global health. Graduates are innovative researchers, effective educators and leaders directly engaged in the practice of population health.

Population health is working to protect the environment, identifying sources of illness in population groups, controlling disease outbreaks, evaluating the economic impacts of changing demographics, developing interventions to promote healthy behavior, and producing health policy legislation. Population health draws from a broad array of disciplines, such as the social and behavioral sciences, sociology, anthropology, psychology, medicine, economics, statistics, epidemiology, law and biology, and each provides unique insights for the diverse set of activities involved in population health practice.

## PhD Program in Health and Behavioral Sciences

The doctor of philosophy degree in health and behavioral sciences is rooted in the realization that our ability as a global society to overcome some of the most significant and intractable public health problems today rests on the willingness of biomedical and social science researchers to innovate across traditional disciplinary boundaries. Students are trained in theory from multiple disciplines and in both quantitative and qualitative research methods.

A master's degree is not provided by the health and behavioral sciences department.

A student's particular research focus constitutes a key part of his or her doctoral program. A range of possible foci exists, given the particular student's interest and faculty expertise. Examples of HBSC research foci include:

- *Social determinants of health.* Such research interests include studies on the health-related influences of socioeconomic position, social and economic inequality, discrimination, social networks and support, social capital, work conditions and psychological states including stress.
- *Community health.* This area of research involves community health assessment; program design and evaluation; translation of evidence-based interventions to diverse populations and communities; participatory research and community mobilization; policy analysis and advocacy for health-related problems.
- *Biosocial ecology.* Within this area are studies of the interplay of biological (including physiological, genetic or others of the biomedical health sciences), social, cultural and

environmental characteristics influencing maternal/infant health, exercise performance or susceptibility to disease.

- *Global health* topics include social, cultural and biomedical factors influencing transmission of disease and health disparities on an international (as well as national) scale.

Recent student research exemplifying such foci includes:

- perinatal stressors and fetal and child health in New Zealand
- gender differences in access to effective HIV care in sub-Saharan Africa
- the factors that shape whether minority owned businesses offer employee sponsored health insurance
- decision making around healthy food choices among school-aged children
- community representation in health organizations in Colorado
- race/ethnic and socioeconomic disparities in exercise, sleep, and nutrition behaviors among U.S. adults

Graduates of the HBSC program acquire skills that situate them for academic careers and leadership roles in population health. Depending upon a student's concentration, the successful graduate will gain expertise in research design and methods; social, cultural and biobehavioral determinants of health and disease; the structure and organization of health care systems; the contribution of individual, social and cultural factors for deciding health behaviors; and how guided change in health care systems may enhance quality, efficacy and access. The significance of these skills in addressing current complex health issues ensures that graduates will be in demand in a number of employment sectors ranging from community and public health organizations, to academic institutions, to nonprofit research organizations and to private health care settings.

Click [here](#) to learn about the **Health and Behavioral Sciences PhD** program requirements.

## **Programs**

### **Doctor of Philosophy**

# **HEALTH AND BEHAVIORAL SCIENCES PHD**

► Graduate School Policies and Procedures apply to this program

## **Requirements for Admission**

A master's or equivalent graduate degree, or substantial research experience, is recommended for admission to the PhD program. Students applying without prerequisites may be admitted, but will be required to complete appropriate courses before being permitted to complete the core curriculum.

In addition to the general admission requirements of the Graduate School, the specific admission requirements for the PhD in health and behavioral sciences are as follows:

1. Knowledge from prior course work or vocational experience in Epidemiology (3 semester hours or the equivalent work experience). The applicant should have an understanding of the basic concepts and methods of epidemiology, including measures of risk, mortality, the distribution of disease, the role of bias and confounders, and study design.
2. Demonstrated academic excellence as evidenced by strong undergraduate and graduate GPAs. Admission to the program is highly competitive.

The applicability of a student's prior course work will be decided by the program executive committee after reviewing the student's transcript and additional materials. If the student does not have the requisite educational background or GPA, the student may be admitted on a conditional or provisional basis and additional course work required in accordance with Graduate School Policies and Procedures.

Prospective students should not be dissuaded from applying to the program if they do not meet all of the requirements for admission. In some cases, employment experience may be counted toward meeting a requirement. In other cases, students may be admitted conditionally upon their completion of a list of prerequisite courses that will be established at the time of admission. Students should be sure to address this issue in completing the graduate application by specifying the academic and vocational experience they possess that meets, in part or full, the admission requirements described above.

## **MASTER'S LEVEL PREPARATION FOR THE DOCTORAL PROGRAM IN HEALTH AND BEHAVIORAL SCIENCES**

The program does not currently offer master's-level training in HBSC.

## **TO APPLY FOR ADMISSION**

At the Denver campus, all graduate applications are now submitted electronically. To begin the application process, go to the online admissions website. If you have any difficulties, call the administrative assistant at 303-315-7157. The program admits students only for the fall semester, which typically begins in mid- to late August. The deadline for the receipt of all application materials is **January 1** for admission the following August.

Applicants should invest considerable thought and effort in preparing their application. For instance, in the essay, applicants should provide information on: (a) their research interests and plans for graduate study; (b) how they see their research interests fitting into our program; (c) academic or professional research experiences including publications, theses, and research in progress; (d) academic and professional experiences in their proposed or related fields, including non-course education, teaching or other relevant employment, or other scholarly activities.

Applicants should also submit a brief writing sample that showcases their current skills in writing and analytical thinking. It is more important that the writing sample reflect their best work than that the topic match their planned area of study in our PhD program. Examples could include a class paper, a selection from a thesis, a lead or sole authored paper, an op-ed style essay, a policy brief, or other sample.

Applicants should provide a current resume or CV to support their application.

In addition to the required recommendation form, letters of recommendation are required from at least three individuals in a position to judge the applicant's ability to complete the program. Recommenders may be employers, colleagues or professors; however, the applicant should be sure that the letters address the quality of, and aptitude for academic work as well as personal characteristics and qualities.

The program does not require GRE scores, but applicants may submit their scores if they believe it will strengthen their application.

## **Financial Aid**

There are five kinds of financial aid available: graduate student stipends/fellowships; tuition assistance; teaching assistantships; research assistantship positions funded by grants to specific program faculty; and the regular package of financial aid (primarily loans) available through the financial aid office.

Newly admitted, out-of-state, and students demonstrating outstanding scholastic achievement receive priority when assigning departmental sources of funding. Students interested in research assistantships should contact the individual faculty member with whom they wish to work regarding potential assistantship positions.

All other aid should be requested through the CU Denver Financial Aid Office.

## **Program Requirements**

There are three dimensions to the required curriculum:

- a) A core curriculum that focuses on problem-oriented, interdisciplinary approaches to theory and method

- b) Elective course work intended to provide the student with a solid base from which to launch the dissertation research
- c) Dissertation research and writing

The curriculum is subject to change. What appears below is intended to give students a general idea of the extent, shape and content of the curriculum. Students should check with the program office for up-to-date information on specific course requirements and scheduling.

## **The Core Curriculum**

The core curriculum should be completed by students by the end of their second year of full-time study. It consists of the following series of courses which, together, constitute 26 semester hours:

### **I. Health and Behavioral Sciences Colloquium**

Each fall, the HBSC program will organize a series of presentations by scholars working in the health and behavioral sciences. The presentations provide students with the most current science and theory in the field. Required of all first- and second-year students, who must take at least two times.

- HBSC 7001 - Colloquium Series in the Health and Behavioral Sciences

**Total: 2 Hours**

### **II. Theoretical Perspectives in the Health and Behavioral Sciences**

This series is designed to give students a thorough background in how the principles of the social and behavioral sciences have been applied to health issues. Topics include: the interplay between structure and agency in creating and maintaining health; social epidemiology; critical theory and social determinants of health; issues affecting Western biomedicine and public health systems; diffusion of healthy behavioral change among populations; social construction of health and illness; health policy and bioethics; social networks; and stress.

- HBSC 7011 - Theoretical Perspectives
- HBSC 7071 - Social and Behavioral Determinants of Health and Disease

**Total: 6 Hours**

### **III. Human Ecology and Environmental Adaptation**

This course will emphasize the biological/physiological dimensions of human health and disease.

- HBSC 7031 - Human Ecology and Environmental Adaptation

**Total: 3 Hours**

#### **IV. Research Design and Methods in the Health and Behavioral Sciences**

Three HBSC core research design and methods courses, plus one additional advanced methods course of student's choosing. This series covers the philosophy of science and the structure of scientific inquiry, procedures for hypothesis-testing, quantitative and qualitative methodological strategies commonly employed in the field, epidemiology and program evaluation.

- HBSC 7041 - Research Design and Methods in the Health and Behavioral Sciences I
- HBSC 7051 - Qualitative Research Design and Methods
- HBSC 7061 - Quantitative Methods in the Health and Behavioral Sciences
- HBSC 7161 - Quantitative Methods in Health&Behavioral Sciences II

**Total: 12 Hours**

#### **V. Applications of the Health and Behavioral Sciences**

This course offers students the opportunity to focus on individual research interests with guidance from faculty and input from peers.

- HBSC 7111 - Applications of the Health and Behavioral Sciences

**Total: 3 Hours**

**TOTAL CORE: 26 Hours**

#### **Elective Courses**

Elective course work together constitutes 6 semester hours, which can be drawn from the large number of offerings in the health and behavioral sciences at CU Denver. Students will be expected to fulfill the necessary prerequisites for taking these courses, and final authority as to whether a student may enroll in the course will rest with the department in which the course is offered.

**TOTAL ELECTIVES: 6 Hours**

#### **Doctoral Dissertation Research**



The doctoral dissertation research topic is chosen by the student. The student is expected to define a research question in health and behavioral science, identify the research strategy to be used for answering the question, conduct the research required and document the project in the form of a doctoral dissertation. The student will be guided in this process by a doctoral dissertation advisor and the additional members who comprise the student's doctoral dissertation committee (see below). A minimum of 30 semester hours of dissertation work is required. Students must register for a minimum of 5 dissertation credits each semester of their dissertation work. Students may not take more than a year's leave of absence or fail to enroll for semester hours more than three semesters before they are dropped from the program.

## **Advisors**

Upon admission to the program, each student will be assigned a first-year advisor. The student or the faculty will then choose the faculty advisor who will guide the student through the core and elective course work. This faculty advisor may or may not be the student's dissertation advisor. The student selects his or her dissertation advisor and a minimum of three additional committee members who oversee the student's comprehensive examination and dissertation research.

## **Formal Review**

A formal review of each student's progress will be undertaken at the end of each year of study. Students who are deemed not to be making satisfactory progress will be informed in writing as to the nature and final result of the review before the end of June.

## **The Dissertation Prospectus and the Comprehensive Examination**

Before a student advances to candidacy, they must complete a dissertation prospectus and defend it successfully in the context of an oral comprehensive examination. The dissertation prospectus is a complete description of the question or hypothesis that the student wishes to research for the dissertation project, the research design and study techniques and an assessment of the proposed project's contribution to the field. It will include a comprehensive review of the relevant literature. If the student chooses to undertake research in a particular ethnic or cultural community, they must also demonstrate sufficient understanding of that setting including adequate knowledge of the language. This prospectus must be approved by the student's advisor prior to scheduling the comprehensive examination.

The comprehensive examination will be an oral format based in part on, but not restricted to, the material presented in the dissertation prospectus. This exam must take place before the student's advancement to candidacy and will typically occur by the end of the third year of study. A committee comprising the advisor and a minimum of three faculty members will supervise the completion of the dissertation prospectus. This committee will conduct the oral examination and will recommend to the faculty by a majority vote whether or not the student should be advanced to candidacy.

## The Doctoral Dissertation and Final Exam

After advancement to candidacy, the student in consultation with his or her advisor will appoint a dissertation committee comprising the chair and a minimum of three faculty members. The dissertation advisor and composition of the committee will be subject to approval by the faculty. The dissertation advisor will be responsible for overseeing the research and writing of the doctoral dissertation. The committee will review drafts of the dissertation and, when the dissertation is completed to its satisfaction, will conduct the final exam, which will be based on the doctoral dissertation and related materials. The final examination will be open to the public.

**Dissertation Total: 30 Hours minimum**

# HISTORY

**Chair:** Christopher L. Agee

**Program Assistant:** Tabitha Fitzpatrick

**Graduate Advisor:** Ryan Crewe

**Office:** Student Commons Building; 1201 Larimer Street, Room 3102, Denver, CO 80204

**Telephone:** 303-315-1776

**Fax:** 303-315-1780

**Website:** [clas.ucdenver.edu/history/](http://clas.ucdenver.edu/history/)

## Faculty

### Professors:

Marjorie Levine-Clark, PhD, University of Iowa

### Associate Professors:

Christopher Agee, PhD, University of California, Berkeley

Ryan Crewe, PhD, Yale University

Gabriel Finkelstein, PhD, Princeton University

Peter Kopp, PhD, University of Nevada, Reno

Kariann A. Yokota, PhD, Yale University

### Assistant Professors:

Xiaofei Gao, PhD, University of California, Santa Cruz

Rachel Gross, PhD, University of Wisconsin, Madison

Dale Stahl, PhD, Columbia University

William E. Wagner, PhD, University of California, Berkeley

### Senior Instructors:

James E. Fell, PhD, University of Colorado Boulder

Richard D. Smith, PhD, University of Colorado Boulder

**Instructors:**

Brandon Mills PhD, University of Illinois at Urbana-Champaign  
Christine Sundberg, MA, University of Colorado Denver

**Associate Professors Clinical Teaching Track:**

Cameron Blevins, PhD, Stanford University

**Assistant Professors Clinical Teaching Track:**

John G. Whitesides, PhD, University of California, Santa Barbara

**Emeritus Professors:**

Frederick S. Allen, PhD, Harvard University  
Mary S. Conroy, PhD, Indiana University  
Rebecca Hunt, PhD, University of Colorado Boulder  
Pamela W. Laird, PhD, Boston University  
Thomas J. Noel, PhD, University of Colorado Boulder  
Carl E. Pletsch, PhD, University of Chicago  
Myra L. Rich, PhD, Yale University  
James B. Whiteside, PhD, University of Colorado  
James B. Wolf, PhD, University of California, Los Angeles

## Introduction

The special responsibility of historical studies is understanding the past. History courses integrate many branches of knowledge, cutting across the lines of the social sciences and the humanities, and even the natural sciences. Identifying forces of stability and processes of change, history students develop their research, writing and analytical skills, which serve them well beyond their university years.

## Graduate Program

[Click here for information about the the MA in History.](#)

[Click here for information about the Public History MA Major program.](#)

[Click here for information about the the Historic Preservation Certificate.](#)

[Click here for information about the U.S. History Graduate Certificate .](#)

[Click here for information about the Global History Graduate Certificate.](#)

## Programs

### Certificates

# GLOBAL HISTORY GRADUATE CERTIFICATE

## Introduction

The Global History Graduate Certificate provides CU Denver graduate students and the wider community the opportunity to explore topics in Global History while simultaneously learning professional skills in historical research and historical dissemination. This Certificate is designed for students interested in pursuing a graduate-level education in Global History and for professionals seeking accreditation and/or promotion in the fields of education, museums, historic preservation, government, law, and the arts.

The certificate can stand on its own or it can serve as a stepping stone to a Master's Degree in History.

Upon successful completion of the certificate, students will:

- Be able to pursue independent historical research projects
- Be able to analyze debates among historians
- Be able to analyze historical documents and develop arguments from them

## Program Delivery

This program has one on-campus requirement and the remainder of the certificate can be completed on campus or online.

## Declaring This Certificate

Applicants must have a B.A. or B.S. degree.

Interested students must register their intent to complete the certificate with the History Department Graduate Advisor, Ryan Crewe (Ryan.Crewe@ucdenver.edu). Students already enrolled in a graduate program at CU Denver can begin their certificate work at any point during their studies. Non-degree students must apply to the university as a non-degree seeking student.

## General Requirements

[Click here](#) for information about Academic Policies.

## Program Requirements

1. Students must complete a minimum of 12 HIST credit hours.
2. Students must complete all HIST credit hours at the graduate level (5000 and above).
3. Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA.
4. All credits for the certificate must be completed with CU Denver faculty.

## Required Courses

Complete the following required course:

- HIST 6013 - Introduction to the Professional Study of History

Complete **one** of the following:

- HIST 6931 - Readings: Special Subjects in History
- HIST 6989 - Seminar: Special Subjects in History

Complete **two** of the following approved elective courses:

- HIST 5027 - Enlightenment and Revolution
- HIST 5028 - Nations and Classes: 19th Century Europe
- HIST 5029 - Age of Anxiety in Europe
- HIST 5030 - Europe During the World Wars
- HIST 5031 - Contemporary Europe
- HIST 5032 - Globalization in World History Since 1945
- HIST 5035 - Crisis and Transformation: Europe's 20th Century
- HIST 5046 - Victorians and Victorianism
- HIST 5051 - Britain and The Empire
- HIST 5055 - The Atlantic Slave Trade: Africa, Caribbean and U.S.
- HIST 5062 - Modern France: 1789 to the Present
- HIST 5071 - Modern Germany
- HIST 5074 - Post-War Germany
- HIST 5075 - Travel Stories and Origins of Cultural Anthropology
- HIST 5076 - History of Modern Science
- HIST 5083 - Russia Since 1917
- HIST 5260 - Digital Studies and Strategies
- HIST 5303 - Sex and Gender in Modern Britain
- HIST 5347 - History of Biology
- HIST 5348 - Mind and Malady: A History of Mental Illness
- HIST 5411 - Modern Mexico

- HIST 5412 - Mexico and the United States: People and Politics on the Border
- HIST 5414 - Nationalism and State Building in Latin America, 1750-1850
- HIST 5415 - Social Revolutions in Latin America
- HIST 5417 - Commodities and Globalization
- HIST 5420 - Traditional China: China to 1600
- HIST 5421 - Modern China
- HIST 5422 - Lving thr Mao's China: Life, Mat. Cult, Movies, 1949-76
- HIST 5431 - Modern Japan
- HIST 5451 - Southern Africa
- HIST 5455 - African Struggle for Independence
- HIST 5461 - The Modern Middle East
- HIST 5462 - Islam in Modern History
- HIST 5471 - The Second World War
- HIST 5472 - The 1950s: Korean War, the Cold War and Social Transformation
- HIST 5475 - The Vietnam War
- HIST 5490 - Weapons of Mass Destruction
- HIST 5621 - Explorers and Exploration
- HIST 5622 - Oceans In History

# HISTORIC PRESERVATION GRADUATE CERTIFICATE

## Graduate Certificate in Historic Preservation

The University of Colorado Denver Graduate Certificate in Historic Preservation is an interdisciplinary collaboration between the College of Architecture and Planning and the History Department. The certificate program is open to any qualified graduate student or non-degree seeking student with a bachelor's degree.

The certificate provides CU Denver students and the wider community with foundational knowledge and skills in Historic Preservation, a field that enhances studies and professional work in areas such as architecture, heritage tourism, historic preservation, national park interpretation, planning, public history, urban studies and related fields.

The certificate can stand on its own, can complement a graduate program in Architecture, History, or Urban Planning; or can serve as a beginning to graduate studies. It can also be a stepping stone to further work in Historic Preservation with the College of Architecture and Planning's Masters of Science in Historic Preservation.

**Applicants must have a B.A. or B.S. degree.**

Interested students must register their intent to complete the certificate with the Director of the Public History & Preservation Program, CU Denver History Department. Students already enrolled in a graduate program at CU Denver can begin their certificate work at any point during their studies. Non-degree students must apply to the university as a non-degree seeking student.

Those students already admitted to a degree program in the College of Architecture and Planning should begin the process by contacting program co-director, Professor Christopher Koziol (Christopher.koziol@ucdenver.edu). All others should contact the Department of History Director of the Public History & Preservation Program, Professors Tom Noel (tom.noel@ucdenver.edu) and Peter Kopp (peter.kopp@ucdenver.edu).

All courses in the certificate program must be taken in residency with CU Denver faculty. Students must maintain a 3.0 GPA, and no course below B- will count towards the certificate.

Graduate students in the History Department can count courses for both their major or minor fields and the requirements for the certificate. Graduate students in the College of Architecture and Planning should discuss credit distributions with their academic advisor.

## Admissions Requirements

- Applicant must have a B.A. or B.S. Degree.
- Applicant applies to the above designated co-director.
- Applicants must provide a transcript, statement of purpose, and two letters of recommendation.

## Program Requirements

1. Students must complete a minimum of 18 credits from approved courses.
2. Students must complete all courses at the graduate (500 and above) level.
3. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All credits for the certificate must be completed with CU Denver faculty.

## Required Courses

Complete **two** of the following courses:

- HIST 5232 - Historic Preservation      **OR**
- HIST 6989 - Seminar: Special Subjects in History

*One of these courses is offered once a year by the History Department.*

- HIPR 6010 - Preservation Theory and Practice

*This course is offered every fall by the College of Architecture and Planning.*

**Total 6 credits**

## **Electives**

These remaining 12 credit hours should be distributed so that at least 3 hours are from each of the two participating colleges, CLAS(HIST) and CAP(ARCH and HIPR), and hence, no more than 9 hours from the other. Be sure to consult your preservation advisor (Profs. Koziol or Noel) on your course selection.

- HIST 5228 - Western Art and Architecture
- HIST 5229 - Colorado Historic Places
- HIST 5240 - National Parks History
- HIST 5245 - Heritage Tourism
- HIST 5939 - Internship

OR

- HIPR 6930 - Internship
- HIST 6950 - Master's Thesis

OR

- HIST 6952 - Master's Project: Public History
- HIPR 6110 - Regionalisms & the Vernacular
- HIPR 6210 - Historic Buildings in Context
- HIPR 6220 - Adaptive Reuse: Business and Practice
- HIPR 6310 - Documentation, Analysis, Representation
- HIPR 6410 - Urban Conservation: Context for Reuse
- HIPR 6510 - Building Conservation
- HIPR 6610 - Reading the City
- ARCH 6210 - History of American Architecture
- ARCH 6212 - History of Modern Architecture

# **U.S. HISTORY GRADUATE CERTIFICATE**



## Introduction

The U.S. History Graduate Certificate provides CU Denver graduate students and the wider community the opportunity to explore topics in United States History while simultaneously learning professional skills in historical research and historical dissemination. This Certificate is designed for students interested in pursuing a graduate-level education in United States History and for professionals seeking accreditation and/or promotion in the fields of education, museums, historic preservation, government, law, and the arts.

The certificate can stand on its own or it can serve as a stepping stone to a Master's Degree in History.

Upon successful completion of the certificate, students will:

- Be able to pursue independent historical research projects
- Be able to analyze debates among historians
- Be able to analyze historical documents and develop arguments from them

## Program Delivery

This program has one on-campus requirement and the remainder of the certificate can be completed on campus or online.

## Declaring This Certificate

Applicants must have a B.A. or B.S. degree.

Interested students must register their intent to complete the certificate with the History Department Graduate Advisor, Ryan Crewe (Ryan.Crewe@ucdenver.edu). Students already enrolled in a graduate program at CU Denver can begin their certificate work at any point during their studies. Non-degree students must apply to the university as a non-degree seeking student.

## General Requirements

[Click here for information about Academic Policies.](#)

## Program Requirements

- Students must complete a minimum of 12 HIST credit hours.
- Students must complete all HIST credits for the certificate at the graduate (5000 or above) level.

- Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA.
- Students must complete all HIST credits for the certificate with CU Denver faculty.

## Required Courses

Complete the following required course:

- HIST 6013 - Introduction to the Professional Study of History

Complete **one** of the following 6000-level courses:

- HIST 6931 - Readings: Special Subjects in History (may be taken as an elective, if not taken in this category)
- HIST 6989 - Seminar: Special Subjects in History (may be taken as an elective, if not taken in this category)

Complete **two** of the following approved elective courses:

- HIST 5201 - Core Themes in U.S. History
- HIST 5209 - Race, Religion, and Belonging
- HIST 5210 - The American Revolution
- HIST 5212 - Civil War and Reconstruction
- HIST 5216 - History of American Popular Culture
- HIST 5217 - Consumer Culture
- HIST 5220 - U.S. Foreign Policy Since 1912
- HIST 5225 - Urban America: Colonial Times to the Present
- HIST 5226 - Capitalism in America
- HIST 5227 - American West
- HIST 5228 - Western Art and Architecture
- HIST 5229 - Colorado Historic Places
- HIST 5230 - Women in the West
- HIST 5234 - Introduction to Public History
- HIST 5236 - Colorado Mining and Railroads
- HIST 5238 - U.S. History Through Fiction
- HIST 5240 - National Parks History
- HIST 5242 - Oral History
- HIST 5243 - Public History Administration
- HIST 5244 - Interpretation of History in Museums: Exhibits and Education
- HIST 5245 - Heritage Tourism
- HIST 5260 - Digital Studies and Strategies

- HIST 5306 - Survey of Feminist Thought
- HIST 5307 - History of Sexuality
- HIST 5308 - Crime, Policing, and Justice in American History
- HIST 5343 - Women & Gender in US History
- HIST 5491 - United States History, 1865-1919
- HIST 5492 - United States History, 1919-1945
- HIST 5493 - United States History, 1945-1973
- HIST 5494 - Red and Blue America: U.S. History, 1973-Present

## Master of Arts

# HISTORY MA

- ▶ Graduate School Policies and Procedures apply to this program

The master of arts in history requires 36 semester hours (12 courses). Students applying for admission to the program should have some background in history, though not necessarily a BA in the subject. The department encourages applications from individuals of any age interested in continuing or resuming their education. Graduate students in history develop skills in critical thinking, writing and independent research. Our program prepares students for a wide variety of professions, including teaching, government service, museum and archive management, and historic preservation, as well as further degree work in history, law, librarianship and business. The department expects that students graduating with an MA in history will master the following general skills for their degrees:

- The ability to pursue independent historical research projects
- The ability to analyze historiographical arguments
- The ability to analyze primary documents and develop arguments from them
- The ability to create bibliographies using archival, library, and Internet resources
- The ability to write in a variety of formats, including historiographical essays, book reviews, and research papers

Students will also master knowledge of the basic historical content of both their major and minor fields, and an understanding of the historiographies and historical methods in their major and minor fields.

## Admission Requirements

- In addition to the general admission requirements of the Graduate School, the Department of History requires an undergraduate GPA of at least 3.25.
- Applicants are required to submit a sample of written work, usually a term paper or project of similar length.

- All applications must include three letters of recommendation, preferably from college or university faculty.
- Applicants should address any gaps, weaknesses, or special circumstances in their academic records in the statement of purpose portion of the application. In special circumstances, the department may modify its admission standards.

## **APPLICATION DEADLINES**

**March 15**            **Fall admission**

**October 15**        **Spring admission**

Admission decisions are made by a graduate committee composed of the graduate advisor and faculty representing fields in U.S., European, global, and public history.

## **Graduate School Policies**

All history MA students are subject to Graduate School policies related to graduate study, as well as to all relevant university policies. These policies cover such topics as time limits on degree completion, changing degree programs, incomplete grades, and more. Further information on these policies can be found in the Graduate School section of this online catalog.

## **Transfer Credits**

With approval from the graduate advisor and the appropriate faculty, students may transfer up to nine graduate-level credits accrued before enrollment in the CU Denver MA history degree program, provided that they earned a grade of B+ or better in these courses. Students must submit a syllabus for each course they wish to transfer, and faculty may require students to complete additional assignments to meet the expectations of the department. The department will not accept transfer of courses comparable to HIST 6013, Introduction to the Professional Study of History.

## **Grade Requirements**

The history department requires that graduate students maintain a cumulative GPA of 3.0 and will not accept grades lower than B- (2.7) toward the completion of course work for the master's degree. Students who earn less than a B- in HIST 6013 must retake the class.

## **Residency Requirements**

The history department requires a residency of at least one academic year for the degree.

## **Graduate Advising**

Early in their first semester, students should contact the history department graduate advisor to discuss their path through the program and to receive advice regarding the selection of major and minor fields.

## **Degree Tracking Responsibility**

Although faculty will provide reasonable guidance, it is up to students to monitor their own progress through the program in consultation with the graduate advisor and their major and minor advisors; this includes knowledge and understanding of application and graduate deadlines, degree requirements, comprehensive exam expectations and processes, thesis guidelines, etc.

## **Choosing Advisors and Fields of Study**

All history MA candidates choose a major field and a minor field. Students will take courses in these fields and will be tested in these fields. After consulting with the graduate advisor, students are responsible for securing two field advisors, one to oversee their progress in the major field, the other to oversee their minor field. All students should have chosen their fields and advisors by the end of the semester in which they have complete 12 credit hours. Students will also need a third advisor for the comprehensive examinations. This third advisor is typically in their major field and students should always consult with them during preparation for the examinations.

## **Major Fields, Minor Fields, and Concentrations**

The MA in history seeks to provide students with a balance of breadth and depth in the study of history. Major fields are broad areas of study within which students gain a general picture of historical processes. Concentrations provide focus for developing expertise within the major, either regionally or thematically. Minor fields provide a complementary or comparative area and must sit outside the major field.

Advisors and students together will work out Plans of Study, which indicate the courses students intend to take to meet their requirements, based on their selection of major and minor fields. *Students should make every effort to enroll in courses that best fit their major field, major concentration and minor field.*

The department has core readings for the Public History and US History fields. Students will draw on these readings for their comprehensive exams. Students working in all fields will coordinate their readings with their major and minor advisors.

### **Major Field Concentrations**

Students work with advisors to select one of the major field concentrations listed below. Concentrations provide thematic or regional focus to a broad geographical or methodological major (e.g. for the global history major, students could concentrate on trade, borders, imperialism, etc.. or any of the areas of regional expertise of our faculty). Readings for the major field concentration are in addition to the core reading list. Note that students may select their concentrations and the options for minors from the same lists, below.

## **Minor Fields**

Students can define their minor field as a specialization within one of the four major fields or as topics from the list of concentrations. Note that students may select their concentrations and the options for minors from the same lists, below.

**Students must select their major and minor fields from any two of the following three groups. (Students may not select their major and minor fields from the same group).**

### **Group 1: Geographical Concentrations**

- East Asia
- Latin America
  - Mexico
  - South America
- Middle East
- Europe
  - Germany
  - France
  - Britain
  - The Mediterranean
- United States
  - Colonial and Early Republic
  - Nineteenth Century
  - U.S. West
  - Twentieth Century
  - U.S. Foreign Policy
  - Colorado
- Global
  - Atlantic World

- Pacific World

## **Group 2: Thematic Concentrations**

- Colonialism and Imperialism
- Cultural History
- Social History
- Foreign Policy
- Economic and Business History
- Environmental History
- Gender and Sexuality
- Citizenship and National Identity
- War, Revolution and Genocide
- Globalization
- Urban History
- Frontiers and Borderlands
- Race and Ethnicity
- Science, Medicine, and Society
- Intellectual History
- Material Culture
- Migration and Immigration
- Policing and Legal History
- Indigenous Histories

## **Group 3: Public History**

- Memory and Community
- Museum Studies
- Historic Preservation

*Note: Majors in Public History must follow the Plan of Study for Public History.*

## **Degree Requirements**

All history MA students must have a major field and a minor field, and they must complete half of their course work at the 6000 level.

## **Required Introductory Course**

- HIST 6013 - Introduction to the Professional Study of History

**Total: 3 Hours**

## **Major Field**

### **Core Course in Major Field (3-6 semester hours)**

Public history and U.S. history major fields require core courses covering major approaches and themes. The core courses familiarize students with the field in a broad sense.

### **Research Seminars (3-6 semester hours)**

Research seminars focus on students' development of an original, primary research paper. One 3-semester-hour research seminar is required of all students. A second research seminar is required for students not in public history; the second 3 semester hours can be taken within the major or minor field.

### **Major Electives (9-12 semester hours)**

Major electives are made up of courses in the major and concentration, including readings courses, that address specific field historiographies, and optional extended research credits. Students who choose to do a thesis may apply 6 thesis semester hours (HIST 6950) toward the major electives requirement.

**Total: 18 Hours**

## **Minor Field**

### **Minor Electives**

Minor electives are made up of courses in the minor field, including readings courses, which address specific field historiographies, or research seminars.

**Total: 12 Semester Hours**

## **Open Elective**

Students may use the open elective to explore a course outside their major or minor or to do extra course work in one of their fields.

**Total: 3 Hours**

## **Degree Total: 36 Hours**

### **INDEPENDENT STUDY AND/OR INTERNSHIP**



Candidates may register for up to 6 hours of internships or independent study, only one of which may be at the 6000-level. Students will not be allowed to fulfill the research seminar requirement with an independent study or internship. Any independent study or internship at the 6000-level needs the permission of the graduate advisor. Students interested in pursuing an independent study or internship must find a faculty member willing to oversee their work, and they should expect the workload to equal or exceed that required for other courses at the same level.

- HIST 5840 - Independent Study: History
- HIST 6840 - Independent Study: HIST
- HIST 6939 - Internship

## **COMPREHENSIVE EXAMINATIONS**

All history MA candidates must pass a comprehensive examination in the major and minor fields after the completion of course work and generally before embarking on a thesis, curriculum project or public history project. The comprehensive exam evaluates students' knowledge of their course work and their reading lists for their major, minor and concentration. The exam consists of a take-home written section, with broad essay questions in both the major and minor fields; this is followed by an oral exam with the student's faculty committee. In answering their exam questions, students are expected to construct arguments and to show mastery of the historiographies, narratives and historical content in their fields. The comprehensive exam is administered and evaluated by a committee of the major advisor, the minor advisor and an outside reader from the history faculty. Students should expect to read 80-100 books combined, as well as significant articles, in their major and minor fields. When appropriate, students may enroll in HIST 6940, Comprehensive Examination, a one-credit requirement connected to faculty commitment to preparing students for their examination.

- HIST 6940 - Comprehensive Exam

## **Master's Degree Extended Research Options**

The MA program in history offers a set of courses in which students can develop extended research interests. Students must select an advisor and develop a proposal for a specific research agenda in the semester before beginning work on a project.

### **REQUIRED PUBLIC HISTORY THESIS (HIST 6950) OR PROJECT (HIST 6952)**

Students majoring in public history must complete either a thesis (6 semester hours) or a project (usually 3 semester hours).

### **OPTIONAL THESIS FOR STUDENTS IN U.S., GLOBAL AND EUROPEAN HISTORY (HIST 6950)**

Students majoring in U.S., Global, or European history can choose to write a thesis (6 semester hours in their major field).

### **OPTIONAL ADVANCED HISTORY CURRICULUM DEVELOPMENT (HIST 6951)**

Students who undertake their master's program when they are already teachers or who intend to become teachers can choose to construct curriculum projects relevant to their teaching practice. See the separate section below on "Opportunities for Teachers and Teachers-in-Training."

- HIST 6950 - Master's Thesis
- HIST 6951 - Masters Project: Advanced History Curriculum Development
- HIST 6952 - Master's Project: Public History

## **Thesis Requirements**

Students writing theses are expected to develop an original research agenda resulting in an extended paper. Students work with their major field advisor, who will help guide them through the process of research and writing. Students will enroll for six credit hours in HIST 6950 over one or more semesters to complete their theses. Before registering for HIST 6950, students should have a thesis proposal and initial bibliography approved by their major advisor.

A thesis is evaluated by a committee of three faculty, including the major advisor and two other faculty members chosen by the student in consultation with the major advisor. Upon completion of the thesis, the student meets with the committee members, who ask questions about the research and conclusions which the student must defend. In most instances, the committee will require further revisions, sometimes major in scope, before the thesis is accepted and cleared for submission to the Graduate School in fulfillment of degree requirements.

## **Project Requirements**

In lieu of a thesis, public history majors may choose to enroll in three credit hours of HIST 6952 to complete a public history project. Projects, which are usually conducted in collaboration with a public history organization, can entail creating an exhibit, developing a museum master plan or organizing an archival collection, conducting a preservation survey, or other activities as approved by their advisor. Students are required to prepare an analytical paper describing the process and results of their project.

## **Opportunities for Teachers and Teachers-in-Training**

### **Curriculum Projects**

Licensed teachers and students who intend to become teachers may choose to complete a curriculum development project. Students arrange curriculum development projects with a sponsoring faculty member. Generally, students are expected to develop and submit a complete course curriculum plan for each 3-semester-hour project. Projects need to show evidence of familiarity with the relevant historiographies and primary sources. Students may apply the hours from HIST 6951 to either the major field or the minor field, depending on the project subjects. Curriculum plans must meet minimum criteria established by the history department in the document Advanced History Curriculum Development Projects.

- HIST 6951 - Masters Project: Advanced History Curriculum Development  
(3 or 6 semester hours in their major field, or 3 semester hours in their major and possibly 3 semester hours in their minor, if a student elects to do a second project)

## **Secondary Teacher Licensure**

Students interested in secondary teacher licensure should consult with the School of Education and Human Development. See the Urban Community Teacher Education Program for information.

# **PUBLIC HISTORY, MA IN HISTORY**

►Graduate School Policies and Procedures apply to this program.

The MA program in history offers graduate-level major and minor fields in public history. Public history is a field of study that applies historical methods to the public sphere. This graduate major requires a concentration, in either museum studies or historic preservation. Public history majors can minor in any subspecialty the department currently offers. Students majoring in U.S., European or Global history can also minor in public history.

Admission Requirements-See History MA

## **Degree Requirements**

1. Students must complete a minimum of 36 credit hours from approved courses.
2. Students must complete all courses at the graduate (5000 or above) level.
3. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail.
4. Students must complete all credits with CU Denver faculty.

## **Required Introductory Course**

- HIST 6013 - Introduction to the Professional Study of History

**Total: 3 Hours**

## **Major Courses**

- HIST 5234 - Introduction to Public History

Students who choose to concentrate in museum studies or historic preservation must take either

- HIST 5231 - History in Museums (for museum studies majors)  
-OR-
- HIST 5232 - Historic Preservation (for historic preservation majors)

## **Research Seminar (3 hours)**

Research seminars focus on students' development of an original, primary research paper.

## **Major Electives (9-12 hours)**

Electives are made up of courses in public history, which focus on methodology and practice and thesis or project credits. These courses include:

- HIST 5133 - Management of Material Culture and Museum Collections
- HIST 5228 - Western Art and Architecture
- HIST 5229 - Colorado Historic Places
- HIST 5240 - National Parks History
- HIST 5242 - Oral History
- HIST 5243 - Public History Administration
- HIST 5244 - Interpretation of History in Museums: Exhibits and Education
- HIST 5245 - Heritage Tourism
- HIST 6992 - Seminar: Colorado Studies

**Total: 18 Hours**

## **Minor Electives**

Electives are made up of courses in the minor field, including readings courses, which address specific field historiographies, or research seminars.

**Total: 12 Hours**

## **Open Elective**

Students may use the open elective to explore a course outside their major or minor or to do extra course work in one of their fields.

**Total: 3 Hours**

**Total: 36 Hours**

### **Independent Studies and/or Internships**

Candidates may register for up to 6 hours of internships or independent study, only one of which may be at the 6000-level. Students will not be allowed to satisfy the research seminar requirement via independent study. Any independent study or internship at the 6000-level needs the permission of the graduate advisor. Students interested in pursuing an independent study or internship must find a faculty member willing to oversee their work, and they should expect the workload to equal or exceed that required for other courses at the same level.

- HIST 5840 - Independent Study: History
- HIST 6840 - Independent Study: HIST
- HIST 6939 - Internship

### **Comprehensive Examinations**

All history MA candidates must pass a comprehensive examination in the major and minor fields after the completion of course work and before embarking on a thesis, curriculum project or public history project. The comprehensive exam evaluates students' knowledge of their course work and their reading lists for their major, minor and concentration. In answering their exam questions, students are expected to construct arguments and to show mastery of the historiographies, narratives and historical content in their fields. The comprehensive exam is administered and evaluated by a committee of the major advisor, the minor advisor and an outside reader from the history faculty.

### **Master's Degree Extended Research Options**

The MA program in history offers a set of courses in which students can develop extended research interests. Students must select an advisor and develop a proposal for a specific research agenda in the semester before beginning work on a project.

#### **REQUIRED PUBLIC HISTORY THESIS (HIST 6950) OR PROJECT (HIST 6952)**

Students majoring in public history must complete either a thesis (6 semester hours) or a project (3 semester hours).

#### **OPTIONAL ADVANCED HISTORY CURRICULUM DEVELOPMENT (HIST 6951)**

Students who undertake their master's program when they are already teachers can choose to construct curriculum projects relevant to their teaching practice. See the separate section below on "Opportunities for Teachers and Teachers-in-Training."

- HIST 6950 - Master's Thesis
- HIST 6951 - Masters Project: Advanced History Curriculum Development
- HIST 6952 - Master's Project: Public History

## **Thesis Requirements**

Students writing theses are expected to develop an original research agenda resulting in an extended paper. Students work with their major field advisor, who will help guide them through the process of research and writing. Students enroll for six credit hours in HIST 6950 to complete their theses. Before registering for HIST 6950, students must have a thesis proposal and initial bibliography approved by their advisor.

A thesis is evaluated by a committee of three, including the major advisor and two other faculty members chosen by the student in consultation with the major advisor. Upon completion of the thesis, the student meets with the committee members, who ask questions about the research and conclusions which the student must defend. In many instances, the committee will require further revisions, sometimes major in scope, before the thesis is accepted and cleared for submission to the Graduate School in fulfillment of degree requirements.

## **Project Requirements**

In lieu of a thesis, public history majors may choose to enroll in one semester of HIST 6952 to complete a public history project. Projects, which are usually conducted in collaboration with a public history organization, can entail creating an exhibit, developing a museum master plan, education program or collection management plan/project, or organizing an archival collection, conducting a preservation survey or similar projects as worked out with their advisor. Students are required to prepare a paper describing the process and results of their project.

- HIST 6952 - Master's Project: Public History

## **Opportunities for Teachers and Teachers-in-Training**

### **Curriculum Projects**

Licensed teachers and teachers-in-training enrolled in the history graduate program may choose to complete a curriculum development project. Students arrange curriculum development projects with a sponsoring faculty member. Generally, students are expected to develop and submit a complete course curriculum plan for this 3-semester-hour project. Projects need to show evidence of familiarity with the relevant historiographies and primary sources. Students may apply the credits from HIST 6951 to either the major field or the minor field, depending on the project subjects. Curriculum plans must meet minimum criteria established by the history department in the document Advanced History Curriculum Development Projects.

- HIST 6951 - Masters Project: Advanced History Curriculum Development (3 semester hours in their major field or minor field)

## Secondary Teacher Licensure

Students interested in secondary teacher licensure should consult with the School of Education and Human Development. See the Urban Teacher Education Program for information.

History MA

# HUMANITIES, MASTER OF

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## Faculty

### Assistant Professor:

Margaret L. Woodhull, PhD, University of Texas, Austin

### Associate Professor:

Omar Swartz, PhD, Purdue University, JD, Duke University

### Instructors:

Lorna Hutchison, PhD, McGill University

The Master of Humanities degree program offers graduate interdisciplinary studies designed for recent university graduates or those who have graduated less recently and are now seeking intellectual enrichment, career change or preparation for a PhD or professional school. Some students are teachers or other professionals seeking additional training to expand their expertise. Many enroll in the program for the sheer satisfaction of intellectual enrichment. It is ideal for students whose professional and personal obligations require flexibility and accessibility. Whether they are part-time or full-time students, students are able to pursue their interests across disciplinary boundaries and enroll in courses from a number of departments. Students who pursue the Master of Humanities will take courses from disciplines traditionally included in the category of liberal arts, such as literature, philosophy, history, communication, fine arts, art history, theatre and music. But they may also include appropriate coursework from the social sciences or other areas. Each student's program is supervised by an MH faculty advisor.

Click [here](#) to learn about the **Master of Humanities requirements**.

## Programs

## Master of Humanities

# HUMANITIES MH

► Graduate School Policies and Procedures apply to this program

## Requirements for Admission

General rules for admission into the Graduate School, as well as the following apply to admission into the MH program:

- evidence of a bachelor's degree
- an official copy of transcripts from all community colleges, colleges, and universities attended
- overall GPA of at least 3.2 out of 4.0
- a writing sample
- three letters of recommendation (at least two from academic sources)
- appropriate undergraduate training or professional background, or experience that provide evidence of ability to pursue the MH degree
- a typed statement specifying the goal of advanced study in the humanities expressed in clear, correct, and effective English. Applicants should provide a statement of their background (education and experience) and its relevance to their proposed interdisciplinary graduate work, and why this graduate program is relevant to their interests.
- standardized test scores are not required, but will be considered if submitted

After meeting all other requirements for admission, applicants may be required to have an interview to discuss their interest in the program and their plans for study. For out-of-state applicants, an appropriate substitute for the interview may be determined by the directors.

## Provisional Admission:

Applicants may be admitted as provisional-status graduate students if their GPA is low and their complete record indicates a high probability of success.

## Non-degree Students:

Potential applicants may take CU Denver graduate-level courses as non-degree seeking students (unclassified student with a bachelor's degree) if they:

1. wish to strengthen their record in order to demonstrate their potential to successfully complete courses in the program



-or-

2. wish to start coursework in the program prior to completing their application, with the understanding that taking courses does not guarantee admission

Up to 12 semester hours of CU Denver graduate-level work taken as a non-degree student or taken from another university may be accepted by the program once a student has been admitted to the program. For further information on non-degree graduate student status, see the Information for Graduate Students section of this catalog. In the case of CU Denver graduate students transferring to the MH program, previous coursework may be accepted as appropriate to the MH plan of study.

## **International Students:**

International students must also meet CU Denver requirements for international admission. See the Information for International Students section of this catalog or call 303-315-2230 for further information.

## **Degree Requirements**

The Master of Humanities (MH) program is a 36 credit hour program, of which 30 hours must meet all specifications of the Graduate School. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. A grade below B- in any given course will not be counted toward the degree. All graded attempts in required and elective courses are calculated in the major GPA. Courses credited toward the MH degree must typically be taken at CU Denver (a maximum of 12 graduate credit hours may be transferred from other institutions after matriculating into the MH program, subject to the MH director's approval). Students wishing to pursue study abroad options must seek advisor approval in advance.

Students may pursue a general MSS degree or concentrate their studies and coursework on an approved track.

Each student's program is supervised by MHMSS faculty. All independent study, project, and thesis contracts must be approved in advance by the program director. A total of two independent study courses and one internship may count toward the degree. Only one graduate-level online course (up to 3 hours) may be taken toward the degree, with prior approval. A maximum of two 4000-level undergraduate courses may apply, with faculty approval. Remaining coursework must be 5000-level or higher and must be completed with CU Denver faculty or approved study away programs. All students must complete and pass a final project or thesis and an oral comprehensive defense of that work, in order to graduate.

## **Three Required Core Seminar Courses**

Take ***all*** of the following courses:

- HUMN 5025 - Foundations and Theories of Interdisciplinary Humanities  
Must be taken during the first year, offered in the fall only.
- HUMN 5013 - Methods and Practices of Graduate Interdisciplinary Humanities  
Must be taken during the first year, offered in the spring only.
- HUMN 5924 - Directed Research and Reading in Interdisciplinary Humanities

Students should take this course after they have completed 21-24 credit hours and are ready to write a proposal for their thesis or project. This course is always offered in the spring and occasionally in the fall, as needed.

**Total: 9 Credit Hours**

## **Electives**

Students must complete a total of 21-24 credit hours. Students completing a project rather than a thesis take 24 hours of electives, while thesis students complete 21 hours of electives. Students may choose to create their own curriculum from at least two disciplines addressing their specific research interest. Alternatively, students may choose to follow an approved specialized track. Prior to taking electives, students must meet with a MHMSS program faculty advisor and establish their course of study. If students decide to change their course of study or want to substitute approved coursework, they must meet with a MHMSS program advisor in advance and gain pre-approval.

**Study Abroad:** Students wishing to count credits accrued from a study abroad program while pursuing the MH must follow the rules of the Graduate School and must have approval of the program director in advance of studying abroad.

**Total: 21-24 Credit Hours**

## **Thesis or Project**

In order to proceed with a project or thesis, all students must submit a proposal and gain approval from three faculty members and the program directors.

- HUMN 5950 - Master's Thesis
- HUMN 5960 - Master's Project

**Total: 3 or 6 Credit Hours**

## Oral Exam

An oral exam defending the project or thesis before a committee of three faculty members must be passed in order to graduate.

## Degree Total: 33-36 Credit Hours

## MH Elective Pathways:

### General MH Track

Students pursuing the general MH degree track create a course of study based on their individual interests and goals. In consultation with a faculty advisor, students choose two or three academic disciplines as areas of concentration. Students who opt to complete a thesis will submit a thesis proposal after completing 30 hours of course work. In the case of a project, students will submit a project proposal after 33 hours.

### Specialized MH Tracks

Students may also focus in one of the tracks in the Master of Humanities program: **Ethnic Studies, Health Humanities, Philosophy and Theory, Social Justice, Visual Studies or Women and Gender Studies.** Tracks allow students to concentrate their studies in a defined field designed by faculty. Students who opt to complete a thesis will submit a thesis proposal after completing 30 hours of course work. In the case of a project, students will submit a project proposal after 33 hours.

### Ethnic Studies Track

Students pursuing the Ethnic Studies track explore the construction of race and ethnicity by governments and communities through the intersection of popular culture and public policy in both the historical and contemporary contexts.

*In addition to the MH Core requirements, students must:*

***Complete at least one ethnic studies methods/theory course from the list below:***

- ETST 5000 - Research Methods in Ethnic Studies
- EDFN 5001 - Problematizing Whiteness: Educating for Racial Justice

***Complete a minimum of 12 credit hours of approved ethnic studies related elective coursework from the list below, substitutions may be approved by the student's advisor:***

- ANTH 5350 - Anthropology of Globalization
- COMM 5270 - Intercultural Communication

- EDFN 5050 - Critical Issues in American Education
- ENGL 5220 - African-American Literature
- ENGL 5460 - Contemporary World Literature
- HIST 5308 - Crime, Policing, and Justice in American History
- HIST 5412 - Mexico and the United States: People and Politics on the Border
- HIST 5415 - Social Revolutions in Latin America
- HIST 5455 - African Struggle for Independence
- HIST 5462 - Islam in Modern History
- HUMN 5770 - Imperialism, Post-Colonial Theory & Visual Discourse
- SSCI 5540 - Law, Diversity and Community in United States History
- PSCI 5094 - Seminar: Urban Politics
- PSCI 5145 - Indigenous Politics
- PSCI 5206 - Social Movements, Democracy and Global Politics
- PSCI 5245 - Gender, Globalization and Development
- PSCI 5256 - Seminar: National Question and Self-Determination
- PSCI 5446 - Advanced Indigenous Peoples' Politics
- PSCI 5545 - Immigration Politics
- PSCI 5914 - Community Organizing and Community Development
- SOCY 5050 - Health Disparities
- SOCY 5440 - Poverty and Social Inequality
- SOCY 5460 - Hate Groups and Group Violence
- SOCY 5690 - Crime and Inequality Over the Life Course
- SPAN 5020 - Spanish Sociolinguistics
- SPAN 5060 - Dialects of the Spanish-Speaking World
- SPAN 5076 - Spanish in Colorado
- SPAN 5080 - Spanish in the United States
- SPAN 5521 - Mexican Literature I: pre-Columbian and Colonial
- SPAN 5522 - Mexican Literature II: 19th to 21st Centuries

***Complete a project or thesis on an approved ethnic studies related topic.***

## **Health Humanities Track**

Health Humanities teaches students to the ways in which humanities disciplines interrogate relationships among health, medicine and society and what those disciplines reveal about biomedical knowledge as well as healthcare policies and practices.

*In addition to the MSS Core requirements, students must:*

***Complete all required foundations courses from the list below:***

- HEHE 5000 Foundations of Health Humanities (offered at the Anschutz Medical Campus)

- HEHE 5001 Foundations of Health Care Ethics (offered at the Anschutz Medical Campus)

***Complete a minimum of 12 credit hours of approved health humanities related elective coursework from the list below, substitutions may be approved by the student's advisor :***

- ANTH 5290 - Anthropology and Public Health
- COMM 5500 - Health Communication
- COMM 5550 - Rhetorics of Medicine & Health
- GEOG 5230 - Hazard Mitigation and Vulnerability Assessment
- GEOG 5235 - GIS Applications in the Health Sciences
- GEOG 5710 - Disasters, Climate Change, and Health
- HEHE 5250 Media, Medicine and Society (on the Anschutz Campus)
- HEHE 5350 Narrative Principles and Practices in Healthcare (on the Anschutz Campus)
- HEHE 5750 Pain Seminar (on the Anschutz Campus)
- HEHE 5800 Ethics Medicine and the Holocaust (on the Anschutz Campus)
- HIST 5347 - History of Biology
- HIST 5348 - Mind and Malady: A History of Mental Illness
- HLTH 6070 - International Health Policy and Management
- PHIL 5242 - Bioethics
- PSCI 5354 - Seminar: Environmental Politics and Policy

***Complete a project or thesis on an approved health humanities related topic.***

## **Philosophy and Theory Track**

The Philosophy and Theory Track in the Master of Humanities Program offers students an interdisciplinary approach to studying philosophy, critical theory, and related theories of criticism and analysis in various Humanities disciplines.

*In addition to the MH Core requirements, students must:*

***Complete a 3 credit philosophy/theory course approved by program director.***

***Complete a minimum of 15 credit hours of approved philosophy/theory related elective coursework from the list below, substitutions may be approved by the student's advisor :***

- ANTH 6103 - Current Theory in Ethnography
- ENGL 5420 - Film Theory and Criticism
- HIST 5306 - Survey of Feminist Thought
- HUMN 5013 - Methods and Practices of Graduate Interdisciplinary Humanities
- HUMN 5020 - Foundations and Theories of Interdisciplinary Social Science

- HUMN 5720 - Sexuality, Gender and Their Visual Representation
- HUMN 5750 - Philosophical Psychology
- HUMN 5984 - Topics: Interdisciplinary Humanities
- PHIL 5101 - Pragmatism: Classical American Philosophy
- PSCI 5206 - Social Movements, Democracy and Global Politics
- PHIL 5220 - Aesthetics and the Philosophy of Art
- PHIL 5242 - Bioethics
- PHIL 5260 - Philosophy of Law
- PHIL 5300 - Philosophy of Mind
- PHIL 5550 - Paris 1910: Art, Philosophy and Psychology
- PHIL 5600 - Philosophy of Religion
- PHIL 5730 - Philosophy and Literature
- PHIL 5750 - Introduction to Phenomenology
- PHIL 5780 - Heidegger
- PHIL 5790 - Nietzsche
- PHIL 5795 - Marx and Marxism
- PHIL 5800 - Plato
- PHIL 5810 - Aristotle
- PHIL 5833 - Existentialism
- PHIL 5900 - John Dewey
- PHIL 5920 - Philosophy of Media and Technology
- PSCI 5457 - Seminar: American Political Thought
- RLST 5060 - Philosophy of Religion
- SOCY 5016 - Social Theory
- WGST 5306 - Survey of Feminist Thought
- WGST 6010 - Methods and Theories of Feminism and Gender Studies

***Complete a project or thesis on an approved philosophy/theory related topic.***

## **Social Justice Track**

The Social Justice Track encourages graduate students to broaden and deepen their intellectual tools as well as their practical knowledge as to how democracy, education, consumerism, media, race, class, gender, policy, and law intersect.

In addition to the MH Core requirements, students must:

***Complete a minimum of 12 credit hours of approved social justice related elective coursework from the list below, substitutions may be approved by the student's advisor:***

- BUSN 6540 - Legal and Ethical Environment of Business
- COMM 5040 - Communication, Prisons, and Social Justice
- ENGL 5190 - Advanced Topics in Writing & Digital Studies (depending on topic)

- ENGL 5306 - Survey of Feminist Thought
- HIST 5032 - Globalization in World History Since 1945
- HIST 5225 - Urban America: Colonial Times to the Present
- HIST 5308 - Crime, Policing, and Justice in American History
- HIST 5415 - Social Revolutions in Latin America
- HIST 5455 - African Struggle for Independence
- HUMN 5650 - Reflections on Modernity
- HUMN 5720 - Sexuality, Gender and Their Visual Representation
- PSCI 5025 - Local Governance and Globalization
- PSCI 5206 - Social Movements, Democracy and Global Politics
- PSCI 5225 - Democracy and Democratization
- PSCI 5245 - Gender, Globalization and Development
- PSCI 5274 - Conflict Resolution and Public Consent Building
- PSCI 5276 - Conflicts and Rights in International Law
- PSCI 5286 - International Relations: War or Peace?
- PSCI 5414 - Non-Profits and Social Change
- PSCI 5545 - Immigration Politics
- PSCI 5555 - International Women's Resistance
- PSCI 5837 - Contemporary Issues in Civil Liberties
- SOCY 5440 - Poverty and Social Inequality
- SOCY 5460 - Hate Groups and Group Violence
- SSCI 6010 - Methods and Theories of Feminism and Gender Studies
- WGST 5303 - Sex and Gender in Modern Britain
- WGST 5307 - History of Sexuality
- WGST 5345 - Gender, Science and Medicine: 1600 to the Present

***Complete a project or thesis on an approved social justice related topic.***

It is **HIGHLY RECOMMENDED** that students in this track take at least one quantitative and/or one qualitative research methods course as part of their plan of study. There are quantitative and qualitative methods courses offered in Anthropology, Environmental Science, Political Science, Sociology, and Research, Evaluation, and Statistical Methodology (RESM), which can be approved by students MHMSS program faculty.

## **Visual Studies Track**

The Visual Studies Track provides students focused studies in disciplines that apply critical analysis to our visual world, such as art history, museum studies, film studies, new media studies, and cultural studies. In a world whose work forces and creative citizenry are focused on the growth and use of visual technologies, visual literacy with sophisticated analytic skills is critical.

*In addition to the MH Core requirements, students must:*

**Complete 3 credit hours of a methods/theory course below:**

- ENGL 5420 - Film Theory and Criticism
- FINE 5790 - Methods in Art History
- HUMN 5660 - Visual Arts: Interpretations and Contexts

**Complete a minimum of 18 credit hours of approved visual arts related elective coursework from the list below, substitutions may be approved by the student's advisor:**

- ARCH 5210 - Introduction to Architecture
- ARCH 5220 - History and Theory Architecture I
- ARCH 5230 - History and Theory Architecture II
- ARCH 6210 - History of American Architecture
- ARCH 6212 - History of Modern Architecture
- ARCH 6220 - History of Architectural Theory
- COMM 5621 - Visual Communication
- ENGL 5770 - Topics in English: Film and Literature
- ENGL 6001 - Critical Theory in Literature and Film
- FINE 4990 - Contemporary Art: 1960 to Present
- FINE 5524 - Topics in Art History II: Modern and Contemporary
- FINE 5610 - Pre-Columbian Art
- FINE 5620 - American Art
- FINE 5632 - History of Digital Media
- FINE 5680 - Art of the Middle Ages
- FINE 5700 - Italian Renaissance Art
- FINE 5705 - Northern Renaissance Art
- FINE 5710 - Baroque and Rococo Art
- FINE 5730 - Arts of Japan
- FINE 5750 - Arts of China
- FINE 5770 - Art of India and Southeast Asia
- FINE 5990 - Contemporary Art:1960-Present
- HIST 5216 - History of American Popular Culture
- HIST 5228 - Western Art and Architecture
- HIST 5231 - History in Museums
- HIST 5232 - Historic Preservation
- HUMN 5720 - Sexuality, Gender and Their Visual Representation
- HUMN 5550 - Paris 1910: Art, Philosophy and Psychology
- PHIL 5220 - Aesthetics and the Philosophy of Art
- PHIL 5550 - Paris 1910: Art, Philosophy and Psychology
- PHIL 5920 - Philosophy of Media and Technology

**Complete a project or thesis on an approved visual arts related topic.**



## **Women's and Gender Studies Track**

Students pursuing the WGST track, focus on issues of sex and gender as they manifest in societies through culture, language, politics, visual representation, and history.

*In addition to the MH Core requirements, students must:*

***Complete at least one WGST theory course from the list below:***

- SSCI/WGST/ HUMN 6010 - Methods and Theories of Feminism and Gender
- WGST/ PHIL 5500 - Feminist Philosophy
- HIST/WGST/ ENGL 5306 - Survey of Feminist Thought
- ENGL/WGST/ HIST 5306 - Survey of Feminist Thought

***Complete a minimum of 12 credit hours of approved women's and gender studies related elective coursework from the list below, substitutions may be approved by the student's advisor:***

- ENGL 5000 - Studies of Major Authors (when the author is a female)
- ETST/ PSCI 4827 - Women and the Law
- WGST/SSCI/ HUMN 5720 - Sexuality, Gender and Their Visual Representation
- SSCI/ HUMN 5770 - Imperialism, Post-Colonial Theory & Visual Discourse
- PSCI 4215 - Women's Rights, Human Rights: Global Perspectives
- PSCI 5555 - International Women's Resistance
- PSCI 5245 - Gender, Globalization and Development
- CRJU 5910 - Nature and Scope of Interpersonal Violence
- CRJU 5930 - Interpersonal Violence Law and Public Policy
- PHIL 5308 - Contemporary Feminist Thought
- PHIL/ WGST 5500 - Feminist Philosophy
- SOCY 5550 - Seminar: Sociology of the Family
- WGST 5230 - Women in the West
- WGST 5248 - Gender, Globalization and Development
- WGST 5303 - Sex and Gender in Modern Britain
- WGST 5306 - Survey of Feminist Thought
- WGST 5307 - History of Sexuality
- WGST 5345 - Gender, Science and Medicine: 1600 to the Present
- WGST 5420 - Goddess Traditions
- WGST 5510 - Whores and Saints: Medieval Women
- WGST 5511 - French Women Writers

***Complete a project or thesis on an approved women's and gender studies related topic.***

# INTEGRATED SCIENCES, MASTER OF

**Mailing Address:**

Integrated Sciences, CB 127

P.O. Box 173364

Denver, CO 80217-3664

**E-mail:** [integrated.sciences@ucdenver.edu](mailto:integrated.sciences@ucdenver.edu)

**Website:** <https://clas.ucdenver.edu/mis>

**Program Director:**

Dr. Martin E. Huber

Professor of Physics and Electrical Engineering

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**Program Assistant:**

Angela Beale, B.S.

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## Program Description

The Master's program in Integrated Sciences (MIS) is designed to provide a broad-based, content-rich curriculum that integrates knowledge and methods from natural and physical sciences, mathematics, and computer science disciplines. MIS is a 30 semester-hour interdisciplinary program in which students take courses from two or three disciplines, identify a faculty mentor, and complete a Master's project or thesis. The signature aspect of the program is that the capstone experience must truly integrate the interdisciplinary content into a unified program of research.

Specifically, students are required to complete a coherent selection of classes in a minimum of two areas and a maximum of three areas within the disciplines of biology, chemistry, computer science, environmental sciences, geology, mathematics or physics. Each student must meet with the Program Director within the first semester of study to develop a program goal statement, which is used to guide his or her individualized curriculum. All classes applied toward the degree must be related to the student's stated program goal and receive prior approval for inclusion in the program of study by the Program Director.

With sufficient justification and with approval from the Program Director, students may take a maximum of six semester-hours outside of the program's areas of concentration. In addition, a maximum of six semester-hours of MINS independent study/internship coursework may be applied to the degree. All such contracts must be approved by the Program Director.

In accordance with Graduate School Rules, a minimum of 24 semester hours must be at the graduate level (5000+). Under exceptional circumstances, up to six semester hours may be taken at the 4000 level, with prior approval from the Program Director.

The student is responsible for ensuring that all prerequisite requirements for the classes they take have been met, even if the prerequisite courses do not count toward the degree.

## **Application Deadline**

Students are admitted for the spring and fall semesters. The deadline for a complete application is April 15 for fall admission and October 15 for spring admission.

Click [here](#) to learn about the **Integrated Sciences MIS** admission and degree requirements.

## **Programs**

### **Master of Science**

# **INTEGRATED SCIENCES MIS**

► Graduate School Policies and Procedures apply to this program

## **Program Description**

Students in the Integrated Sciences program have the opportunity to take courses from a variety of areas in mathematics, the natural and physical sciences (biology, chemistry, environmental sciences, geology, and physics), and computer science in an interdisciplinary STEM program designed for professional growth in their area of interest. These areas are further explored through a required project or thesis that includes focused independent research on a topic that integrates two or three of the disciplines mentioned above.

The length of time it takes to complete the degree is determined by the student's own schedule flexibility; many finish within two years of full-time work. In accordance with Graduate School Rules, the degree must be completed within seven years of matriculation.

## **Admission Requirements**

Admission into the Integrated Sciences program is competitively based. Minimum requirements for an application to be considered are:

- the graduate application form for the University of Colorado Denver, including all application fees
- a statement of purpose specifying why the applicant wishes to be admitted to the program, the applicant's primary and secondary disciplines of interest, and their academic and professional goals
- three letters of recommendation from individuals who can speak to the applicant's academic qualifications, of which at least two must be from academic sources
- transcripts from all institutions of higher learning attended by the applicant
- a bachelor's degree from an accredited college or university
- a minimum cumulative undergraduate GPA of 3.0 on a 4.0 scale; however, applicants with an undergraduate GPA below 3.0 may be considered if they have taken the Graduate Record Examination (GRE) and if the scores are forwarded to the program office
- 40 semester hours of undergraduate courses in biology, chemistry, computer science, environmental sciences, geology, mathematics, and/or physics

Possessing the minimum requirements will guarantee that the application is considered. It does not, however, guarantee admission. The admissions committee will select students competitively to create a high-quality and balanced cohort of participants entering the program each year.

## **Application Deadline**

Students are admitted for the spring and fall semesters. The deadline for a complete application is April 15 for fall admission and October 15 for spring admission.

## **Core Requirement**

Students are required to enroll in MINS 5200, Research Methods in Interdisciplinary Science, within their first year of the program. This course serves as an introduction to the program and helps students to develop research skills and to further their professional development. This course is offered in the fall semester only.

- MINS 5200 - Research Methods in Interdisciplinary Science

## **Concentration and Breadth Requirements**

The student must designate one area of concentration (the primary area of study) and one or two breadth areas (the secondary and, if applicable, tertiary areas of study) within the disciplines of biology, chemistry, computer science, environmental sciences, geology, mathematics or physics. An interdisciplinary area of study (including but not limited to fields such as biochemistry, biophysics, or computational biology) may also be considered. The

student must complete a minimum of nine semester hours in the chosen area of concentration and a minimum of six semester hours in each depth area.

## **Project or Thesis Requirement**

The program provides students with two options as their capstone experience, either a project or a thesis, depending on their academic and professional goals. All students must conduct independent research integrating coursework from the disciplines in their program of study. The research is conducted as either a project (requiring 3-4 semester-hours of MINS 5960) or a thesis (requiring 4-6 semester-hours of MINS 5950), and is presented to their examination committee in both written and oral forms. The student must successfully defend their project/thesis in an oral examination (defense) in order to graduate. Prior to enrolling in Project or Thesis hours, all students must submit a proposal approved by three faculty members (one of whom is their graduate faculty advisor) and the Program Director.

- MINS 5950 - Master's Thesis
- MINS 5960 - Master's Project

## **Graduate Advisor and Examination Committee**

All candidates for the MIS degree must select a faculty advisor and arrange for two other faculty members to serve with the advisor as the candidate's graduate examination committee. The committee members must have graduate standing at the University of Colorado Denver and be approved by the Program Director. The name of the faculty advisor must be submitted to the Program Director at the start of the third semester following matriculation to the program.

**Degree Total: 30**

# **INTEGRATIVE BIOLOGY**

**Chair:** John G. Swallow

**Associate Chair:** Amanda Charlesworth

**Program Assistant:** Barbara Schmidt, Barbara McClure

**Administrative Assistant:** Jacki Craig

**Undergraduate BS Program Director:** Kimberly F. Regier

**Graduate Program Director:** Alan Vajda

**Graduate Program Coordinator:** Virginia Ware

**Health Careers Advising:** Charles A. Ferguson, Gene Brooks, Trishia Vasquez, Denise Leberer

**BA/BS-MD Program Coordinator:** Trishia Vasquez

**Lab Coordinator:** James Salmen

**Office:** Science, 2071

**Telephone:** 303-556-8440

**Fax:** 303-556-4352

**Website:** [clas.ucdenver.edu/biology/](http://clas.ucdenver.edu/biology/)

## **Faculty**

### **Professors:**

Charles A. Ferguson, PhD, University of Colorado Boulder  
Roderick Nairn, PhD, University of London  
Bradley J. Stith, PhD, Washington State University  
John G. Swallow PhD, University of Wisconsin Madison  
Diana F. Tomback, PhD, University of California, Santa Barbara

### **Associate Professors:**

Christopher J. Phiel, PhD, Thomas Jefferson University  
Amanda Charlesworth, PhD, University College, London  
Greg Cronin, PhD, University of North Carolina at Chapel Hill  
Michael J. Greene, PhD, Oregon State University  
Laurel Hartley, PhD, Colorado State University  
Timberley M. Roane, PhD, University of Arizona  
Michael Wunder, PhD, Colorado State University  
Alan Vajda, PhD, University of Colorado Boulder

### **Assistant Professors:**

Brian Buma, PhD, University of Colorado Boulder  
Carlos Infante, PhD, Harvard University  
Christopher S. Miller, PhD, University of California Los Angeles  
Annika Mosier, PhD, Stanford University  
Gregory Ragland, PhD, University of North Carolina Chapel Hill

### **Senior Instructors:**

Hannah Anchordoquy, PhD, University of Colorado  
Laurel Beck, PhD, Michigan State University  
Cheri A. Jones, PhD, University of Florida  
David Knochel, PhD, University of Colorado Boulder  
Kimberly F. Regier, EdD, University of Colorado Denver  
Gene Brooks, DDS, University of Missouri  
Lisa Johansen, PhD, University of Alabama  
Molly Nepokroeff, PhD, University of Wisconsin Madison

### **Clinical Assistant Professor:**

Tod Duncan, PhD, University of College London

### **Emeritus Faculty:**

Gerald Audesirk, PhD, California Institute of Technology  
Teresa E. Audesirk, PhD, University of Southern California  
Linda K. Dixon, PhD, University of Illinois

John H. Freed PhD, Stanford University

Leo P. Bruederle, PhD, Rutgers, the State University of New Jersey

## Graduate Program

### MS in Biology

The MS in Biology program offers students the opportunity to receive advanced training and research experience in an area of specialization of one of our nationally and internationally recognized faculty members. The master's program is designed to prepare graduate students for careers in research and teaching; for employment in business, industry and government; for existing career advancement; and for continuing post-baccalaureate work in PhD and professional programs. Students in the program specialize in fields ranging from cell and molecular biology to ecology and evolution.

The master's program is a research-based program. Applicants to the program must have a declared area of specialization that aligns with the research focus of a biology graduate faculty member. Faculty expertise can be found undergraduate faculty profiles on the Department of Integrative Biology website ([clas.ucdenver.edu/biology/](http://clas.ucdenver.edu/biology/)). Students must contact prospective faculty advisors to determine if openings are available within the faculty member's research group.

Click here to learn about the **Biology MS** requirements.

### PhD in Integrative and Systems Biology

The PhD program in Integrative and Systems Biology at the University of Colorado Denver is a multidisciplinary, dual campus program that offers students opportunities to address complex questions in biology using computational, laboratory and field approaches. The more than 40 program faculty members allow students to participate on a diversity of projects at all levels of biological organization, ranging from ecology and environmental microbiology to biochemistry, developmental biology and neuroscience. Depending on the track an incoming student chooses, the approach will either be to explore the problem at multiple levels of biological organization (integrative biology) or to explore the multi-component nature of a biological system (systems biology).

The PhD program is research-based. Applicants to the program must have a declared area of specialization that aligns with the research focus of a program graduate faculty member. Faculty expertise can be found undergraduate faculty profiles on the Department of Integrative Biology website ([clas.ucdenver.edu/biology/](http://clas.ucdenver.edu/biology/)). Students must contact prospective faculty advisors to determine if openings are available within the faculty member's research group.

Click here to learn about the **Integrative and Systems Biology PhD** requirements.

## Programs

**Doctor of Philosophy**

# INTEGRATIVE AND SYSTEMS BIOLOGY, PHD

► Graduate School Rules apply to this program.

**Director for PhD Program:** Alan Vajda

**Office:** Science, 4104

**Telephone:** 303-315-7640

**E-mail:** Alan.Vajda@ucdenver.edu

**Website:** <https://clas.ucdenver.edu/integrative-biology/academics/graduate-programs>

## Requirements for Admission

- A BA/BS or MS from an accredited institution awarded within the last 10 years (validation of current content may be required).-Minimum undergraduate GPA: 3.0
- TOEFL: required for international applicants from countries in which English is not the official language
- 3 letters of recommendation
- Official transcripts from all attended institutions
- Students are required to contact faculty in advance. Prior to application, applicants must have identified and contacted an available Faculty Advisor to ensure availability of a position and appropriate research interests

### ***Prerequisite courses required:***

- One year of General Biology is preferred. Where needed, supplementary courses or reading programs may be designed to provide background information of sufficient depth for the Program curriculum
- One course in applied or biological statistics (through regression and ANOVA)
- Additional prerequisite requirements may be set by individual faculty

Applications will be considered annually starting December 1 for both domestic US students and international students. Application to the PhD program is through CU Denver Admissions.



## **Degree Requirements**

The PhD degree requirements comprise six phases. First, students must complete a minimum of 60 credits, including 30 dissertation credits. Up to 30 hours of graduate level courses from other programs may be transferred and counted toward the degree. Students must also pass the Preliminary Exam, form an Advisory Committee and an Examination Committee, meet the academic residency requirement, pass the comprehensive exam, and write and orally defend a dissertation.

Research-based PhD degree program **requires**

1. Completing 60 credits including 30 of dissertation (BIOL 8990)
2. Meeting minimum academic residency requirements
3. Passing the Preliminary Exam
4. Forming Advisory and Examination committees
5. Writing and defending research proposal
6. Passing the Comprehensive Exam
7. Writing and defending dissertation (including >1 publishable paper)

## **Required Courses**

- BIOL 6764 - Biological Data Analysis (4 credits taken in the first year)
- BIOL 6705 - Biological Research Workshop (4 credits total, taken two different times in the student's career)
- BIOL 6655 - Seminar (2 credits total, taken two different times in the student's career)
- BIOL 7010 - Integrative and Systems Biology (3 credits taken in the first year))
- BIOL 7050 - Special Topics (a minimum of 3 credits must be completed, but students may take up to 9 credits)
- BIOL 8990 - Doctoral Dissertation (30 credits must be completed after passing the Comprehensive Exam)
- BIOL 6002 - Biology Skills Sets - Pedagogy (2 credits taken in the first year; only required for students supported by a Graduate Teaching Assistantship)

**Master of Science**

# **BIOLOGY MS**

► Graduate School Rules apply to this program.

**Graduate MS Program Director:** Alan Vajda

**Office:** Science, 4104

**Telephone:** 303-315-7640

**E-mail:** Alan.Vajda@ucdenver.edu

**Website:** <https://clas.ucdenver.edu/integrative-biology/academics/graduate-programs>

## Requirements for Admission

- A BA/BS from an accredited institution awarded within the last 10 years (validation of current content may be required)
- Minimum undergraduate GPA: 3.0
- TOEFL: required for international applicants from countries in which English is not the official language
- 3 letters of recommendation
- Official transcripts from all attended institutions
- Students are required to contact faculty in advance. Prior to application, applicants must have identified and contacted an available Faculty Advisor to ensure the availability of a position and appropriate research interests

### Prerequisite courses required:

- One year of general biology (lecture and laboratory)
- One year of any combination of chemistry, physics or mathematics
- One course in applied or biological statistics (through regression and ANOVA)
- Additional prerequisite requirements may be set by individual faculty

**Application deadline is December 1 for both domestic U.S. and international students.** Application to the master's in biology program is through CU Denver Admissions.

## Degree Requirements

Students matriculate into the research-based MS degree program. Under unusual circumstances, students and/or advisors may petition for a student to switch into the coursework-based MS degree program. The research-based MS program requires a minimum of 30 credits, and the coursework-based MS program requires a minimum of 32 credits. No double-counted courses will be applied to the degree. A maximum of 12 hours of graduate level courses may be transferred and counted toward the degree in either program. Both programs additionally require the student to meet minimum academic residency requirements, to form an advisory committee and to deliver and orally defend written work before the advisory committee, which constitutes the final exam for both programs as required by the Graduate School.

Research-based MS degree program **requires**

1. Completing 30 credits including 3-6 thesis (BIOL 6950)
2. Meeting minimum academic residency requirements
3. Forming and meeting regularly with an advisory committee
4. Writing and defending research proposal
5. Writing and defending research thesis (including a publishable paper)

#### Coursework-based MS degree program **requires**

1. Approved petition to transfer into coursework-based program
2. Completing a minimum of 32 credits
3. Meeting minimum academic residency requirements
4. Writing and defending publication-quality review paper (before advisory committee)

#### **Required Courses:**

- BIOL 6705 - Biological Research Workshop (4 credits total-take in 2 different years)
- BIOL 6655 - Seminar (2 credits total-take in 2 different years)
- BIOL 6764 - Biological Data Analysis (4 credits total-take in year 1)
- BIOL 6002 - Biology Skills Sets - Pedagogy (required only for students supported by a Graduate Teaching Assistantship)

#### ***Additional minimum requirements for research-based MS program***

- BIOL 6950 - Master's Thesis (1-2 credits in first spring/summer to write proposal and 2-4 credits in final semester to write thesis)

#### ***Additional minimum requirements for the coursework-based MS program***

- BIOL 5840 - Independent Study: BIOL (3 credits: advisor--guided review paper)

# INTERDISCIPLINARY PROGRAMS

Interdisciplinary programs encourage students to synthesize the theories, methods and analytical perspectives of diverse disciplines to bring new ways of understanding to particular themes or problems. Interdisciplinary studies foster research and teaching collaboration among faculty and students, who cross traditional academic specialties. Interdisciplinary programs also place a high value on reaching beyond the university into our local, national and global communities, providing students with real-world experiences through internships and experiential learning.

The college also has several established interdisciplinary programs leading to graduate degrees. A brief description of each program follows, with a link to its respective program section.

## Graduate Programs

- The MS IN ENVIRONMENTAL SCIENCES combines environmental courses from the social sciences, physical sciences, engineering, humanities and statistics. A graduate certificate is also available.
- PhD IN HEALTH AND BEHAVIORAL SCIENCES students integrate social, cultural and biomedical perspectives to understand the underpinnings of health and the conditions essential for its creation and maintenance.
- The MASTER OF INTEGRATED SCIENCES (MIS) degree is designed to offer students a flexible program that combines courses in mathematics, the natural and physical sciences(biology, chemistry, geology, physics) and computer science. The MIS fosters professional growth targeted to students' particular interests, which are further developed through a required project or thesis that includes independent research.
- The MASTER OF HUMANITIES (MH) / MASTER OF SOCIAL SCIENCE (MSS) programs welcome students whose interests are diverse and who want to look at ideas in varied modes. Both the MH and the MSS programs offer students the opportunity to take courses from multiple disciplines and craft a study plan that bridges the traditional boundaries of a university's departments. Through this interdisciplinary curriculum, students learn to think innovatively with critical and analytical skills that prepare them for a rapidly changing world.
- The GRADUATE CERTIFICATE IN WOMEN'S AND GENDER STUDIES provides CU Denver students and the public with specialized knowledge related to women's and gender concerns. It is available to any qualified graduate student or non-degree seeking, post-BA student.

# MATHEMATICAL AND STATISTICAL SCIENCES

**Chair:** Julien Langou

**Associate Chair:** Stephen Hartke

**Program Assistant II:** Maria Rase

**Administrative Assistant III:** Susan Rivera

**IT Senior Professional:** Joseph Malingowski

**Office:** Student Commons Building, 4th Floor

**Telephone:** 303-315-1700

**Fax:** 303-315-1704

**Website:** [www.math.ucdenver.edu](http://www.math.ucdenver.edu)

**Department Email:** [MathStaff@ucdenver.edu](mailto:MathStaff@ucdenver.edu)

# Faculty

## Professors:

Michael S. Jacobson, PhD, Emory University  
Julien Langou, PhD, INSA, Toulouse, France  
Weldon A. Lodwick, PhD, Oregon State University  
Jan Mandel, PhD, (equivalent), Charles University, Czechoslovakia  
Florian Pfender, PhD, Emory University  
Stephanie A. Santorico, PhD, North Carolina State University

## Associate Professors:

Stephen Billups, PhD, University of Wisconsin-Madison  
  
Steffen Borgwardt, PhD, Technische Universität München  
  
Troy Butler, PhD, Colorado State University  
Joshua French, PhD, Colorado State University  
Stephen Hartke, PhD, Rutgers University  
Burton Simon, PhD, University of Michigan, Ann Arbor  
Diana White, PhD, University of Nebraska

## Assistant Professors:

Erin Austin, PhD, University of Minnesota  
Audrey Hendricks, PhD, Boston University  
Yaning Liu, PhD, Florida State University  
  
Emily Speakman, PhD, University of Michigan

## Associate Professors, Clinical Teaching Track:

RaKissa Manzanares, EdD, University of Northern Colorado  
Adam Spiegler, PhD, University of Arizona

## Senior Instructors:

Michael Kawai, MS, University of Colorado Denver  
Gary Olson, MS, University of Colorado  
Robert Rostermundt, PhD, University of Denver

## Instructors:

Joe Bilello, MS, Long Island University  
Daniel Klie, MS, University of Colorado Denver  
Lance Lana, MS, University of Colorado Denver  
Dmitriy Ostrovskiy, PhD, State University of New York at Stony Brook  
Pamela Whitten, MA, University of Colorado, Boulder

## International College of Beijing Faculty:

Ba Nguyen, PhD, Wayne State University

## Research Faculty:

Aime Fournier, PhD, Yale University

**Emeritus Faculty:**

William Briggs, PhD, Harvard University

William E. Cherowitzo, PhD, Columbia University

Kathryn L. Fraughnaugh, PhD, University of Houston

Andrew Knyazev, PhD, Russian Academy of Sciences

J. Richard Lundgren, PhD, Ohio State University

Stanley E. Payne, PhD, Florida State University

The Department of Mathematical and Statistical Sciences at the University of Colorado Denver offers degrees and certificates at the undergraduate and graduate levels in mathematics, applied mathematics, data science, and statistics through coursework, research and industrial collaboration. Traditional courses such as calculus, linear algebra, probability, statistics and discrete mathematics are offered regularly by the department. In addition, contemporary subjects such as high-performance computing; numerical analysis, optimization, statistical methods, and operations research are also well represented by course offerings and faculty interests. In all of its activities, the department embodies the outlook that mathematics, statistics, computing and data science are powerful tool that can be used to solve problems of immediate and practical importance.

Apart from the specialized mathematical and statistical skills acquired through course work, the degrees and certificates also provide general skills that are valued by many employers. These skills include problem solving, critical thinking, analysis, facility with data, the ability to process quantitative information, and perhaps most important of all, the ability to learn new skills and concepts quickly

## **Center for Computational & Mathematical Biology**

**Director:** Weldon Lodwick

**Telephone:** 303-315-1733

**Website:** <http://ccmb.ucdenver.edu/>

The Center for Computational Biology (CCMB) is a multidisciplinary center focused on computational and mathematical biology research and education.

## **Center for Computational Mathematics**

**Director:** Jan Mandel

**Telephone:** 303-315-1703

**Website:** <http://ccm.ucdenver.edu>

The Center for Computational Mathematics is composed of faculty members who have an interest in computational mathematics, the study of solving mathematical problems with computers. The center resides in the Department of Mathematical and Statistical Sciences and includes faculty members from various other departments. The primary goal of the center is to foster research in computational mathematics and to maintain a

strong educational program at all levels. It has extensive ties with industry along the Front Range and with government laboratories throughout the nation. It offers students an excellent opportunity to receive training and experience in this exciting new field. The center operates several supercomputing clusters.

## **Math Clinic**

**Website:** <https://clas.ucdenver.edu/mathematical-and-statistical-sciences/math-clinic>

Each semester, the Department of Mathematical and Statistical Sciences conducts math clinics that are open to both undergraduate and graduate students. Each clinic is sponsored by a business, government agency or research organization. The clinic sponsor provides a specific project on which students work with the supervision of a faculty member and a sponsor representative. Every clinic results in a final report to the sponsor and provides participating students with an opportunity to apply mathematics to relevant problems. Recent math clinic sponsors include Raytheon, Lockheed Martin, Xenometrix, Budget Truck Rental and United Launch Alliance.

## **Statistical Consulting Service**

The Department of Mathematical and Statistical Sciences regularly offers a graduate course in statistical consulting in which students work on problems provided by researchers and clients at CU Denver and in the Denver metropolitan area. Potential clients should contact the department at 303-315-1700.

## **Graduate Program**

**Directors:** Stephanie Santorico

**Telephone:** 303-315-1705

The Department of Mathematical and Statistical Sciences offers the MS degrees in Applied Mathematics and Statistics and the PhD degree in Applied Mathematics. Each of these degree programs conforms to the rules and policies of the Graduate School Policies and Procedures.

Detailed descriptions of the requirements for the MS and PhD degrees are maintained at [www.math.ucdenver.edu](http://www.math.ucdenver.edu). The following is an abbreviated summary of these requirements.

### **Requirements for Admission**

To begin graduate work toward the MS or PhD degrees in Applied Mathematics, a student should have at least the following preparation: 30 semester hours of mathematics with each course grade at B- or better and *an overall GPA of 3.0 or better*, at least 24 of which are upper-division courses. These courses should include a full year of advanced calculus or introduction to analysis, one semester of linear algebra and one

semester of either differential equations, abstract algebra, discrete mathematics or probability. Additionally, students should take the GRE exam.

To begin graduate work toward the MS in Statistics, a student should have at least the following preparation: a baccalaureate (not necessarily in mathematics or statistics) from an accredited college or university with a grade point average (GPA) of 3.0 or above. Students must have taken three semesters of calculus (through multivariate calculus), linear algebra, and a calculus-based statistics course that covers basic probability and statistical distributions. Admitted students are generally expected to have completed several additional upper-division mathematics courses on top of the minimum requirements, though students from non-mathematics backgrounds who meet minimum requirements and have exceptional track records will be considered on a case-by-case basis. Additionally, students should take the GRE exam.

Students who do not have all the prerequisites may be admitted with prerequisite deficiencies with the understanding that those deficiencies must be removed after admission. Students who have a cumulative undergraduate GPA that is less than 3.0 may be eligible for provisional admission to the master's program (see also the Graduate School admission requirements).

#### **Application Deadlines**

Applications to the MS or PhD programs should be submitted by the following target dates to be guaranteed full consideration. International students should submit their applications one month prior to these target dates.

<b>Target Dates for PhD Program</b>	<b>Target Dates for MS Programs</b>
<b>January 15:</b> fall semester	<b>Apr 1:</b> fall semester
No summer applications of admissions for the PhD program	<b>March 1:</b> Summer semester
<b>Oct 1:</b> spring semester	<b>Nov 1:</b> spring semester

Applications received after the target dates may still be considered for admission, depending on space availability.

#### **Financial Support**

PhD students are encouraged to apply for teaching assistantships. A variety of other opportunities for financial support are also available.

Click here to learn about the **requirements for the MS in Applied Mathematics**.

Click here to learn about the **requirements for the MS in Applied Statistics**.

Click here to learn about the **requirements for the PhD in Applied Mathematics**.



## **Applied Statistics Certificate**

**Director:** Joshua French

**Telephone:** 303-315-1709

**Website:** <https://clas.ucdenver.edu/mathematical-and-statistical-sciences/graduate-certificate-applied-statistics>

Click here to learn about the **requirements for the Graduate Certificate in Applied Statistics**.

### **Programs**

**Bachelor of Science/Master of Science**

# **5 YEAR MATHEMATICS BS/STATISTICS MS**

### **Introduction**

This is a unique program where a student can obtain both a B.S. in Mathematics and M.S. in Statistics in five years through a specialized course sequence. The program requires 12 fewer credits than if both degrees were earned separately.

### **Program Delivery**

- This is an on-campus program.

### **Declaring This Major**

- Work with your advisor to declare this major.

### **General Requirements**

To earn a bachelor's degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements
- CU Denver Core Curriculum
- College of Liberal Arts & Sciences Graduation Requirements
- [Click here for information about Academic Policies](#)

### **Program Requirements for Mathematics BS**

1. Students must earn a minimum grade of C- (1.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 2.25. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail.
2. Students must declare their intent to complete this program during their junior or senior year, after completing MATH 1401, 2411, 2421, 3000, 3191, and 3382.
3. The semester you graduate, you must:
  - Complete the MFAT Exam and participate in an exit interview. These requirements will be scheduled through the department Administrative Assistant
  - Complete a senior survey.
4. To graduate as a Mathematics major, must have a minimum of 30 hours of resident credit and at least 15 upper-division mathematics credits must be taken at CU Denver.
5. Students with at least a 3.5 major grade point average, at least 3.2 overall grade point average, and who have done an honors project are eligible to graduate with honors. See an advisor (or the honors advising sheet) for details.

Take **all** of the following Mathematics courses:

- MATH 1401 - Calculus I
- MATH 2411 - Calculus II
- MATH 2421 - Calculus III
- MATH 3000 - Introduction to Abstract Mathematics
- MATH 3191 - Applied Linear Algebra
- MATH 3382 - Statistical Theory
- MATH 4310 - Introduction to Real Analysis I
- MATH 5310 - Probability
- MATH 5320 - Introduction to Mathematical Statistics
- MATH 5387 - Applied Regression Analysis
- MATH 6330 - Workshop in Statistical Consulting

Take **one** of the following programming courses:

- MATH 1376 - Programming for Data Science or CSCI 1410 - Fundamentals of Computing
- CSCI 1411 - Fundamentals of Computing Laboratory

Take **two** additional MATH classes (and at least 6 credits) above 3000 excluding 3040, 3195, 3511, 3800, 4012, 4013, 4014, 4015 and 4830.

## **Program Requirements for Statistics MS**

1. In the semester in which the student intends to complete their BS, students must apply for admission into MS in Statistics Program. They should have declared their intent to complete this program to the Director of the Program in Statistics after completing MATH 1401, 2411, 2421, 3000, 3191, and 3382.
2. Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0, for all courses that will apply to the MS. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail.
3. Students must present 30 hours of course work (which are broken into 4 components as detailed below) for the M.S. degree.
4. At least 24 of these hours must consist of graduate level (numbered 5000 or higher) courses with the MATH prefix.
5. The remaining 6 hours must be either MATH courses numbered 5000 or above or pre-approved courses outside the department numbered 4000 or above.
6. Students must complete a written project and pass a final oral exam.

Note that the MATH 5310, MATH 5320, MATH 5387, and MATH 6330 courses used for the B.S. portion of the degree apply to the 30 hours of course work and satisfy the core requirement discussed below.

Up to 9 semester hours of prior course work may be transferred in (subject to approval); these must be at the 5000 level or above with a B- or better grade. Courses already applied toward a prior degree (graduate or undergraduate) cannot be used toward the M.S. degree in Statistics. Additionally, the following MATH courses will NOT count toward a graduate degree: MATH 5000-5009, 5010, 5012-5015, 5017, 5198, 5250, and 5830.

Following completion of course work, all students must complete a written project and pass a final oral exam. The project is developed as a student-centered independent research component within MATH 5960 unless the student has chosen the thesis option. For students choosing the thesis option, 4 to 6 hours (of the 30 required hours) may be devoted to the writing of a thesis through MATH 5950. According to Graduate School policies, Masters students, whether enrolled full-time or part-time, must complete all degree requirements within 7 years of matriculating into the graduate program.

The MS degree in Statistics consists of 4 components: 1) core courses, 2) statistics electives, 3) other electives, and 4) MATH 5960 (Master's project) or MATH 5950 (Master's thesis).

The **4 core courses** include:

- MATH 5310 - Probability
- MATH 5320 - Introduction to Mathematical Statistics
- MATH 5387 - Applied Regression Analysis

- MATH 6330 - Workshop in Statistical Consulting

and are satisfied during the completion of the B.S. portion of the degree.

Students must take **at least three** additional statistics electives courses from the list below:

- MATH 5394 - Experimental Designs
- MATH 5792 - Probabilistic Modeling
- MATH 6101 - Uncertainty Quantification
- MATH 6380 - Stochastic Processes
- MATH 6384 - Spatial and Functional Data Analysis
- MATH 6388 - Statistical and Machine Learning
- MATH 7393 - Bayesian Statistics
- MATH 7384 - Mathematical Probability
- MATH 7386 - Monte Carlo Methods
- MATH 7826 - Topics in Probability and Statistics

Additional courses given prior approval by the student's advisor and the Director of the Program in Statistics

Students must take **two** Other Electives: Any MATH prefix course that can be used for an M.S. or Ph.D. degree in Applied Mathematics can be used as another Elective. While these courses could be additional statistics-focused courses, the added flexibility allows students to direct their coursework into other areas of mathematics and/or science. The following courses will not count toward the M.S. in Statistics: MATH 5000-5010, MATH 5012-5015, MATH 5017, MATH 5198, MATH 5250 and MATH 5830.

Students must take either MATH 5950 or MATH 5960 as part of completing their written project.

### **Certificate**

# **APPLIED STATISTICS GRADUATE CERTIFICATE**

► Graduate School Policies and Procedures apply to this program.

**Coordinator:** Joshua French Ph.D.

**Telephone:** 303-315-1709

**E-mail:** Joshua.French@ucdenver.edu

**Web site:** <https://clas.ucdenver.edu/mathematical-and-statistical-sciences/graduate-certificate-applied-statistics>

There is a growing need for qualified statistical analysts of the ever-increasing amounts of data collected in business, industry, and government. The Certificate in Applied Statistics program is designed to give students a strong background in statistical methodology and data analysis in preparation for opportunities in the workforce or for graduate studies.

Students will gain competence in such topics as descriptive statistics, estimation, confidence intervals, probability and inferential techniques, simple and multiple regression, analysis of variance, and more advanced topics. Students can focus on a particular application area such as economics, psychology, sociology, geology, or environmental science through the choice of an elective course and the data analysis project.

## **Admissions Requirements**

The minimum admission requirements for students applying for the Graduate Certificate in Applied Statistics are:

- A bachelor's degree (not necessarily in mathematics or statistics) from an accredited college or university
- A grade point average (GPA) of 3.0 or above during their bachelor's degree.
- Students must have taken three semesters of calculus (through multivariate calculus), linear algebra, and a calculus-based statistics course that covers basic probability and statistical distributions.

Subject to approval by the Director of the Statistical Programs and the Graduate Committee, students with prerequisite deficiencies may be admitted with the understanding that those deficiencies must be removed after admission. Courses taken to fulfill admission deficiencies may not be counted toward the certificate.

## **Certificate Requirements**

Four courses and a 1 hour independent study are required as detailed below.

### **Two Fundamental Courses in Statistics**

- MATH 5320 - Introduction to Mathematical Statistics

Offered: SPRING

- MATH 5387 - Applied Regression Analysis

Offered: FALL, SPRING, SUMMER

## **One Advanced Applications Course**

Topics vary from year to year. Course must be pre-approved by certificate coordinator and cannot be MATH 5830. Representative courses include:

- MATH 5394 - Experimental Designs
- MATH 5792 - Probabilistic Modeling
- MATH 6101 - Uncertainty Quantification
- MATH 6376 - Statistical Computing
- MATH 6380 - Stochastic Processes
- MATH 6384 - Spatial and Functional Data Analysis
- MATH 6388 - Statistical and Machine Learning
- MATH 7384 - Mathematical Probability
- MATH 7386 - Monte Carlo Methods
- MATH 7393 - Bayesian Statistics
- MATH 7826 - Topics in Probability and Statistics

An additional course given prior approval by the student's advisor and the Director of Statistical Programs.

## **One Elective**

Any statistics course in the Department of Mathematical and Statistical Sciences at the 5000 level or higher (must be pre-approved by the Certificate Coordinator). MATH 5830 cannot apply towards the certificate.

- ECON 5150 - Economic Forecasting
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II
- ENVS 5600 - Applied Statistics for the Natural Sciences
- SOCY 5183 - Seminar: Quantitative Data Analysis

## **Project Requirement**

An independent data analysis project with a report and presentation to demonstrate proficiency with data analysis techniques and a statistical computing software package. Enroll for one hour of MATH 5840, Independent Study, or in an equivalent course pre-approved by the Certificate Coordinator.

## **Additional Requirements**

Students must maintain a 3.0 GPA or above in these courses with no credit given for courses with grades below B-. Since a certificate is a University of Colorado Denver certification of a student's specialized knowledge in an advanced subject area, all courses in the certificate program must be taken in residency at University of Colorado Denver. Students must be enrolled in one course per year to maintain their status in the certificate program.

Certificates must be completed within 3 years from matriculation.

## Doctor of Philosophy

# APPLIED MATHEMATICS PHD

► Graduate School Policies and Procedures apply to this program.

The Department of Mathematical and Statistical Sciences offers a PhD in Applied Mathematics. The degree is designed to give candidates a contemporary, comprehensive education in applied mathematics and to provide research opportunities in the special fields of computational mathematics, discrete mathematics, mathematics of science and engineering, operations research, optimization, probability, and statistics.

## Program Requirements

There are six phases of the PhD program. A candidate must fulfill course requirements, pass the preliminary examinations, establish a PhD committee, meet the academic residency requirement, pass the comprehensive examination and write and defend a dissertation.

- Students must complete 42 semester hours of non-thesis course work at the graduate level (up to 30 hours of this course work may be transferred in, including courses taken as part of a master's degree). In addition, 30 hours of dissertation credit must be taken. The following courses are required as part of the formal course work: MATH 5779-Math Clinic and three readings courses (1 semester hour each). Students must also satisfy a breadth requirement by completing a total of six graduate math courses from among several areas of mathematics, with no more than three of these courses from any one area.
- Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.25. All graded attempts in required and elective courses are calculated in the major GPA. [The following MATH courses will NOT count toward a graduate degree: MATH 5000-5009, 5010, 5012-5015, 5017, 5198, 5250 and 5830.]
- The preliminary examinations are designed to determine that students who intend to pursue the PhD program are qualified to do so. These four-hour written

examinations are in the areas of applied analysis and applied linear algebra. Students must pass these exams by the start of their fourth semester.

- Six semesters of full-time scholarly work are required, as specified in the rules of the Graduate School. All students are strongly advised to spend at least one year doing full-time course work or research with no outside employment.
- The comprehensive examination is taken after completion of the preliminary exams, completion of at least three semesters of residency, and upon completion of essentially all non-thesis coursework. The exam is designed to determine mastery of graduate-level mathematics and the ability to embark on dissertation research. It consists of a six-hour written examination and an oral follow-up examination. Students must pass the comprehensive exam by the beginning of the 4th year. Within six months after passing the comprehensive examination, the candidate must present a dissertation proposal to their dissertation committee.
- Each student must write and defend a dissertation containing original contributions and evidence of significant scholarship. The dissertation defense is public and must be given before an examining committee approved by the Graduate School.

For more detailed information about the Applied Mathematics PhD, see [www.math.ucdenver.edu/phd](http://www.math.ucdenver.edu/phd).

## **Master of Science**

# APPLIED MATHEMATICS MS

► Graduate School Policies and Procedures apply to this program.

## **Program Requirements**

Students must present 30 hours of course work for the MS degree. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. At least 24 of these hours must consist of graduate-level (numbered 5000 or higher) mathematics courses. The remaining 6 hours must be either mathematics courses numbered 5000 or above or approved courses outside the department numbered 4000 or above.

Up to 9 semester hours of prior course work may be transferred in (subject to approval); these must be at the 5000 level or above with a B- or better grade. Courses already applied toward another degree (graduate or undergraduate) cannot be used toward the MS degree in applied mathematics. Additionally, the following MATH courses will NOT



count toward a graduate degree: MATH 5000-5009, 5010, 5012-5015, 5017, 5198, 5250, and 5830.

A student may devote from 4 to 6 hours (of the 30 required hours) to the writing of a thesis. Following completion of course work, all candidates must make a one-hour oral presentation of a project or a thesis before a committee consisting of three graduate faculty members.

## Course Requirements

The following course requirements must be satisfied by all students in the MS in Applied Mathematics Program:

1. (Analysis Core Requirement) One of: MATH 5070 (Applied Analysis) or MATH 6131 (Real Analysis),
2. (Linear Algebra Core Requirement) MATH 5718 (Applied Linear Algebra), and
3. At least 24 additional semester hours of coursework, subject to the rule about 4000-level courses in disciplines outside of mathematics outlined above

Additionally, a student must either satisfy the course requirements for the MS degree without a concentration area or satisfy the requirements in one of the concentration areas listed below. Unless noted elsewhere, one course cannot be used to fulfill two requirements. Substitutions or changes to the requirements may be made with the written approval of a student's academic advisor and the Graduate Committee.

The following MATH courses will NOT count toward a graduate degree: MATH 5000-5009, 5010, 5012-5015, 5017, 5198, 5250 and 5830.

- MATH 5070 - Applied Analysis
- MATH 5718 - Applied Linear Algebra
- MATH 6131 - Real Analysis

## MS Degree without a Concentration Area

Students must complete at least three courses chosen from the following list. Note that MATH 6131 (Real Analysis) can be used to satisfy both the analysis core requirement and may also count as one of the three courses satisfying this requirement.

- Any MATH course at the 6000 level or above
- MATH 5310 - Probability
- MATH 5320 - Introduction to Mathematical Statistics
- MATH 5490 - Network Flows
- MATH 5593 - Linear Programming

Additional course options may be added later at the discretion of the Department of Mathematical and Statistical Sciences, e.g., as new courses are introduced to the graduate program.

## **Applied Statistics Concentration**

**Take all of the following courses:**

- MATH 5310 - Probability
- MATH 5320 - Introduction to Mathematical Statistics
- MATH 5387 - Applied Regression Analysis
- MATH 6330 - Workshop in Statistical Consulting

**And, take one of the following courses:**

- MATH 5394 - Experimental Designs
- MATH 5792 - Probabilistic Modeling
- MATH 6376 - Statistical Computing
- MATH 6380 - Stochastic Processes
- MATH 6384 - Spatial and Functional Data Analysis
- MATH 6388 - Statistical and Machine Learning
- MATH 7384 - Mathematical Probability
- MATH 7393 - Bayesian Statistics
- MATH 6101 - Uncertainty Quantification
- MATH 7386 - Monte Carlo Methods
- MATH 7826 - Topics in Probability and Statistics

Any additional course given prior approval by the student's advisor and the Director of the Program in Statistics.

## **Applied Probability Concentration**

**Take all of the following courses:**

- MATH 5310 - Probability
- MATH 5792 - Probabilistic Modeling
- MATH 6380 - Stochastic Processes

**And, take one of the following courses:**

- MATH 6131 - Real Analysis
- MATH 6101 - Uncertainty Quantification
- MATH 7386 - Monte Carlo Methods

## **Discrete Mathematics Concentration**

**Four of the following courses:**

- MATH 5410 - Modern Cryptology
- MATH 5490 - Network Flows
- MATH 5793 - Discrete Math Modeling
- MATH 6404 - Applied Graph Theory
- MATH 7405 - Advanced Graph Theory
- MATH 7409 - Applied Combinatorics
- MATH 7410 - Combinatorial Structures
- MATH 7413 - Modern Algebra I
- MATH 7419 - Mathematical Coding Theory
- MATH 7421 - Projective Geometry
- MATH 7821 - Topics in Projective Geometry
- MATH 7823 - Topics in Discrete Math

## **Mathematics of Engineering and Science Concentration**

**Three of the following courses:**

- MATH 5387 - Applied Regression Analysis
- MATH 5779 - Math Clinic
- MATH 5791 - Continuous Modeling
- MATH 5792 - Probabilistic Modeling
- MATH 5793 - Discrete Math Modeling
- MATH 5794 - Optimization Modeling
- MATH 6735 - Continuum Mechanics

**And, take two of the following courses:**

- MATH 5660 - Numerical Analysis I
- MATH 5661 - Numerical Analysis II
- MATH 5733 - Partial Differential Equations
- MATH 6653 - Introduction to Finite Element Methods
- MATH 7663 - Finite Difference Methods for Partial Differential Equations
- MATH 6101 - Uncertainty Quantification
- MATH 7386 - Monte Carlo Methods
- MATH 7665 - Numerical Linear Algebra

## **Numerical Analysis Concentration**

**Take all of the following courses:**

- MATH 5660 - Numerical Analysis I
- MATH 5661 - Numerical Analysis II

**And, take three of the following courses:**

- MATH 5593 - Linear Programming
- MATH 5733 - Partial Differential Equations
- MATH 6595 - Computational Methods in Nonlinear Programming
- MATH 6653 - Introduction to Finite Element Methods
- MATH 6735 - Continuum Mechanics
- MATH 7665 - Numerical Linear Algebra
- MATH 8660 - Mathematical Foundations of Finite Element Methods
- MATH 6101 - Uncertainty Quantification
- MATH 7386 - Monte Carlo Methods

## **Operations Research Concentration**

**Take all of the following courses:**

- MATH 5593 - Linear Programming
- MATH 5792 - Probabilistic Modeling

OR

- MATH 6380 - Stochastic Processes

**And, take two of the following courses:**

- MATH 5390 - Game Theory
- MATH 5490 - Network Flows
- MATH 5794 - Optimization Modeling
- MATH 6595 - Computational Methods in Nonlinear Programming
- MATH 7593 - Advanced Linear Programming
- MATH 7594 - Integer Programming
- MATH 7595 - Advanced Nonlinear Programming
- MATH 7825 - Topics in Optimization
- MATH 5779 - Math Clinic

# **STATISTICS MS**

## **Program Requirements**

Students must present 30 hours of course work (which are broken into 4 components as detailed below) and maintain a 3.0 GPA or above for the MS degree. At least 24 of these hours must consist of graduate level (numbered 5000 or higher) courses with the MATH prefix. The remaining 6 hours must be either MATH courses numbered 5000 or above or approved courses outside the department numbered 4000 or above.

Up to 9 semester hours of prior course work may be transferred in (subject to approval); these must be at the 5000 level or above with a B- or better grade. Courses already applied toward another degree (graduate or undergraduate) cannot be used toward the MS degree in Statistics. Additionally, the following MATH courses will NOT count toward a graduate degree: MATH 5010, 5012-5015, 5017, 5198, 5250, and 5830.

All students must complete a written project and pass a final oral exam. The project is developed as a student-centered independent research component within MATH 5960 unless the student has chosen the thesis option. For students choosing the thesis option, 4 to 6 hours (of the 30 required hours) may be devoted to the writing of a thesis through MATH 5950. By graduate school rules, Master's students, whether enrolled full-time or part-time, must complete all degree requirements within 7 years of matriculation.

## Course Requirements for the MS Degree in Statistics

The MS degree in Statistics consists of 4 components: 1) core courses, 2) statistics electives, 3) other electives, and 4) MATH5960 (Master's project) or MATH5950 (Master's thesis).

**Core Courses:** The core courses include:

- MATH 5310 - Probability
- MATH 5320 - Introduction to Mathematical Statistics
- MATH 5387 - Applied Regression Analysis
- MATH 6330 - Workshop in Statistical Consulting

**Statistics Electives:** Nine hours of statistics electives are required. A running list is given below. Additional courses can be substituted given prior approval by the student's advisor and the Director of the Program in Statistics.

- MATH 5394 - Experimental Designs
- MATH 5792 - Probabilistic Modeling
- MATH 6101 - Uncertainty Quantification
- MATH 6380 - Stochastic Processes
- MATH 6384 - Spatial and Functional Data Analysis
- MATH 6388 - Statistical and Machine Learning
- MATH 7384 - Mathematical Probability
- MATH 7386 - Monte Carlo Methods
- MATH 7393 - Bayesian Statistics

- MATH 7826 - Topics in Probability and Statistics

Additional courses may be taken but students must seek prior approval from their advisor and the Director of the Program in Statistics.

**Other Electives:** Six hours of other electives are required. Any MATH prefix course that can be used for an MS or Ph.D. degree in Applied Mathematics can be used as an Other Elective. While these courses could be additional statistics-focused courses, the added flexibility allows students to direct their coursework into other areas of mathematics and/or science. The following courses will not count toward the M.S. in Statistics: MATH 5010, MATH 5012-5015, MATH 5017, MATH 5198, MATH 5250 and MATH 5830.

# MODERN LANGUAGES

**Chair:** Devin Jenkins  
**Program Assistant:** Niki Mott  
**Office:** Plaza Building, Room 118  
**Mailing Address:**  
Campus Box 178  
P.O. Box 173364  
Denver, CO 80217-3364  
**Telephone:** 303-315-7234  
**Fax:** 303-315-7233

## General Information

The Department of Modern Languages teaches Arabic, Chinese, French, German, Latin and Spanish. The department offers undergraduate majors in French and Spanish, minors in Chinese, French, Spanish, and Linguistics, a certificate in Spanish for International Business, and an MA in Spanish.

## Relevance to Other Programs

Our courses can be applied toward fulfilling major and minor requirements. Additionally, study in the Department of Modern Languages prepares students in the languages, literatures and civilizations of the people who speak those languages. Certain courses may apply to the fulfillment of core curriculum requirements in the College of Liberal Arts and Sciences. Other courses may lead to a secondary-school teaching certificate, or the Master of Arts degrees in Spanish or Education at CU Denver, or to the Master of Arts degree in French or Spanish at CU Boulder. Only courses numbered 5000 and above may apply to a master's degree; students enrolled in any master's program should consult with their advisor before enrolling in courses at CU Denver.

## Spanish Faculty

**Associate Professors:**

Michael Abeyta, PhD, University of California-Davis  
Kathleen Bollard, PhD, University of California-Berkeley  
María Luisa Fernández Martínez, PhD, University of California, Irvine  
Devin Jenkins, PhD, University of New Mexico  
Andrés Lema-Hincapié, PhD, Cornell University and PhD, University of Ottawa

**Assistant Professor:**

Alyssa Martoccio, PhD, University of Illinois

**Instructors:**

Ileana Gross, MA, University of Georgia  
Amanda Ritchie, MA, University of Akron  
Gabriela de Robles, PhD, Georgetown University

**Graduate Advisor:**

Michael Abeyta

**Study Abroad Advisor:**

Devin Jenkins

**Internship Director:**

Andrés Lema-Hincapié

[Click here to learn about the requirements for the MA in Spanish.](#)

**Arabic Faculty****Lecturer:**

Tamara el-Masri, MLS, University of Denver

**Chinese Faculty****Assistant Professor:**

I-hao Victor Woo, PhD, Boston University

**Lecturer:**

Jing Li, BA, Nankai University

**French Faculty****Associate Professor:**

Diane Dansereau, PhD, University of Michigan

**Associate Professor, Clinical Track:**

Linda Alcott, PhD, University of Colorado

**Senior Instructor:**

Lori Willard, PhD, University of Colorado

**Instructor:**

Jocelyne Hunsinger, BA, University of Ottawa (Ontario, Canada)

**French Advisor:**

Diane Dansereau

## **German Faculty**

**Lecturer:**

Maggie Rosenau, PhD, University of Colorado

## **Latin Faculty**

**Lecturer:**

Mary De Forest, PhD, University of Colorado

Alan Sumler, PhD, CUNY

## **Programs**

### **Master of Arts**

# **SPANISH MA**

- ▶ Graduate School Policies and Procedures apply to this program

The faculty of the CU Denver Modern Languages Department offer a Spanish Master's degree program that is an alternative to the exclusively literary studies that traditionally lead to doctoral programs. By integrating language, literature and cultural studies with ancillary work in other disciplines, the degree provides a broader expertise that will lead to or enhance careers in teaching, government, social services, business and international trade. Students will tailor the program to their specific interests and needs by developing a topical focus and including courses from outside the Department of Modern Languages, through which they may develop a secondary emphasis that can be incorporated in a thesis project.

## **Requirements for Admission**



In addition to the general admission requirements of the Graduate School, the Spanish MA program requires:

- an undergraduate GPA of at least 3.0, with a GPA of at least 3.0 in Spanish courses
- a bachelor's degree in Spanish is not required, although all candidates must demonstrate Spanish oral and written proficiency at the advanced level, as defined by the American Council on the Teaching of Foreign Languages
- two copies of all college transcripts
- three letters of recommendation
- a statement of the applicant's purpose in pursuing the degree, in Spanish; any gaps, weaknesses or special circumstances affecting an applicant's academic record should be addressed in the statement of purpose portion of the application
- a TOEFL score higher than 550 for students whose previous academic degree was completed in a non-English-speaking country

In special circumstances, the department may modify its admission standards.

## Program Requirements

1. Students must complete a minimum of 27 SPAN credit hours.
2. Students must complete a minimum of 30 graduate level (5000 or above) credit hours.
3. Students must earn a minimum grade of B (3.0) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All credit hours for the certificate must be earned at the University of Colorado Denver.

Candidates in Spanish must satisfy the general requirements of the Graduate School as outlined in this catalog and will be required to complete 33 hours of course work distributed with respect to one of the following two options:

### Thesis option (course work + thesis):

- **3 hours** SPAN 5000 - Introduction to Graduate Studies in Spanish
- **24 hours** Literature/Culture and Linguistics coursework, including at least 6 semester hours in Literature/Culture and 6 in Linguistics. Students may include up to two courses (3-6 credits) from outside the Modern Languages Department, as approved by their advisor.
- **6 hours** SPAN 5950 - Master's Thesis preparation and writing

**Thesis Option Total: 33 Hours**

## **Nonthesis option (course work):**

- **3 hours** SPAN 5000 - Introduction to Graduate Studies in Spanish
- **30 hours** Literature/Culture and Linguistics coursework, including at least 6 hours in Literature/Culture and 6 in Linguistics. Students may include up to two courses (3-6 credits) from outside the Modern Languages Department, as approved by their advisor.

## **Nonthesis Option Total: 33 Hours**

### **Notes:**

1. No more than one undergraduate course (3 semester hours) may be applied toward the MA degree, and that course must have been taken at the 4000 level or above and in an ancillary field outside the Department of Modern Languages.
2. Students choosing the nonthesis option may elect to take three courses (9 semester hours) outside the department.

## **Financial Aid**

The department offers a limited number of teaching assistantships for graduate students on a semester-by-semester basis. Appointment is competitive and is typically based on a student's academic credentials. Contact the department for details. For information on grants, federal work-study programs, scholarships and loans, contact the Office of Financial Aid (303-556-2886).

For further information concerning the master's degree in Spanish at CU Denver, direct inquiries to the graduate advisor.

# **PHYSICS**

**Chair:** Micahel "Bodhi" Rogers

**Program Assistant:** Dawn Arge

**Office Assistant:** Nikki Martinez

**Office:** North Classroom, 3801

**Telephone:** 303-556-8344

**Fax:** 303-556-6257

**Website:** [clas.ucdenver.edu/physics/](http://clas.ucdenver.edu/physics/)

## **Faculty**

**Professors:**

Martin E. Huber, PhD, Stanford University  
Micahel "Bodhi" Rogers, PhD, RPA, Oregon State University  
Alberto C. Sadun, PhD, Massachusetts Institute of Technology

**Associate Professor:**

Randall P. Tagg, PhD, Massachusetts Institute of Technology

**Assistant Professors:**

Amy L. Roberts, PhD, University of Notre Dame  
Anthony N. Villano, PhD, Rensselaer Polytechnic Institute

**Clinical Associate Professors:**

Masoud Asadi-Zeydabadi, PhD, University of Colorado Boulder

**Senior Instructors:**

John Carlson, PhD, University of Michigan, Ann Arbor  
Ramesh Dhungana, PhD, University of North Dakota, Grand Forks  
Richard Geyer, PhD, Colorado School of Mines  
Steve Maxson, JD, PhD, University of Texas at Austin

**Senior Professional Research Assistant:**

Bruce Hines, MS, University of Colorado Denver

**Emeritus Professors:**

Martin M. Maltempo, PhD, Columbia University  
Clyde S. Zaidins, PhD, California Institute of Technology

Physics, as the most fundamental of the sciences, is the foundation upon which many other disciplines are built. Therefore, other programs often require knowledge of the fundamentals of physics, and a physics degree is an outstanding platform for employment and advanced study in many technical disciplines. The department offers both a course of study fulfilling the bachelor of science degree and a wide range of service courses for students majoring in disciplines other than physics.

The Department of Physics offers two programs of study, or tracks. Students should consult with a departmental advisor prior to choosing a track. *Track 1-Pure and Applied Physics* is intended for students preparing for graduate school, teaching careers, or careers in industry or government labs. *Track 2-Biophysics and Medical Physics* is seen as a bridge to an advanced degree in the health sciences for those interested in medical research, admission to medical school, preparation for work in a hospital or clinical situation, or industrial jobs in biomedical instrumentation. For either track, students preparing for employment in an interdisciplinary area (such as environmental, geophysical or energy study) can choose to add an appropriate minor or arrange a specific major program on an individual basis.

The department now also offers an online certificate in the Scientific Foundations of Technical Innovation at both undergraduate and graduate levels. This 12-semester-hour program is intended to foster careers in the practical application of physics and the potential commercialization of new technologies.

To enhance the employment and postgraduate study options of physics majors, the department is committed to providing students with opportunities for experimental, computational and theoretical research. On-campus opportunities are available through the faculty research programs. Questions regarding physics courses or the physics curriculum should be directed to a departmental advisor. Appointments should be made through the physics office.

## **Certificate Program**

Click here to learn more about the requirements for the **Scientific Foundations of Technical Innovation Certificate**.

## **Programs**

### **Certificate**

# **SCIENTIFIC FOUNDATIONS OF TECHNICAL INNOVATION CERTIFICATE**

The goal of this certificate is to give students and working professionals an opportunity to broaden their technical knowledge while contributing to regional economic development. Two real-world projects—one for a client and one for the student’s own pursuits—are combined with a series of six short courses to provide both context and substance for gaining the knowledge needed to create technical prototypes. The model is based on the method by which most physical science graduate students learn technical domains on a “just-in-time” basis. It is also a method by which many corporations quickly bring new project team members up to speed on project knowledge. Entry into the certificate program requires prior completion of two semesters of calculus-based physics and two semesters of calculus or permission of the certificate advisor.

## Program Requirements

- Students must complete a minimum of 12 credit hours from approved coursework.
- Students must complete all credits for the certificate at the graduate (5000 or above) level.
- Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA.
- Students must complete all credits for the certificate with CU Denver faculty.

Graduate versions of the courses (5000-level) require an undergraduate degree and additional work on technical analysis or connection to professional practice.

### Complete all of the following courses:

- PHYS 5850 - Physics for Design and Innovation I
- PHYS 5400 - Scientific Instrumentation

Choose six 1-semester-hour short courses out of a larger list of offered topics; the specific sequence must be approved by the certificate advisor.

- PHYS 5852 - Physics for Design and Innovation II

**Total: 12 Hours**

# POLITICAL SCIENCE

**Chair:** Tony Robinson

**Program Assistant:** Kelly Stritzinger

**Undergraduate Advisor:** Karen Breslin

**Pre-law Advisor:** Glenn Morris

**Graduate Advisor:** Michael Berry

**Director, New Directions Program:** Minsun Ji

**Office:** Student Commons, Room 3212

**Telephone:** 303-315-1770

**Fax:** 303-315-1780

**Website:** <https://clas.ucdenver.edu/polisci/>

## Faculty

**Professors:**

Christoph Stefes, PhD, Denver University

**Associate Professors:**

Betsy Jose, PhD, University of Pittsburgh

James Walsh, PhD, Regis University

Glenn T. Morris, JD, Harvard University School of Law

Tony Robinson, PhD, University of California, Berkeley

Thorsten Spehn, PhD, University of Denver

Bassem Hassan, PhD, University of Denver

Stephen C. Thomas, PhD, Stanford University

Michael J. Berry, PhD, University of Colorado

**Assistant Professors:**

Sasha Breger-Bush, PhD, University of Denver

Chad Shomura, PhD, Johns Hopkins University

**Senior Instructors:**

Harvey Bishop, MA, University of Colorado

**Instructors:**

Karen Breslin, JD, University of Denver

**Adjunct Faculty:**

Charles Norton, JD, University of Chicago

Minsun Ji, PhD, University of Denver

**Emeritus Faculty:**

Joel Edelstein, PhD, University of California, Riverside

Mike Cummings, PhD, Stanford University

Jana Everett, PhD, University of Michigan

Political science is the study of people, power and the public good. Looking at a variety of societies, institutions and interpersonal situations, the discipline asks who has power, where this power comes from, how it is used, how it promotes or impairs the public good and how the public good is defined. Political science draws from other fields, such as psychology, philosophy, economics, sociology and world literature. Finally, it explores the relationship between idealism and realism, between theory and practice, between political thought and personal action.

Opportunities for students with a degree in political science include careers in business, teaching, journalism, community organizing and government service. A political science degree also serves as good preparation for professional training in law and public administration. Students' internship experiences increase their job opportunities. Students with an MA in political science may find careers in such areas as business, government research and administration and teaching at the community-college level.

The CU Denver Political Science Masters Program provides many opportunities for professional development through political internships, for community-based learning through a focused community organizing and development curriculum (including many teaching, research and service partnerships with local community organizations), and for international engagement through a robust international politics curriculum, study abroad opportunities, and partnerships with international organizations.

Please visit the political science department website for detailed information on programs, faculty, students, courses and syllabi, community involvement and service learning, internships and photographs.

## **Graduate Program**

Click here to learn about the **requirements for the Masters in Political Science** degree.

Click here to learn about the **requirements for the Masters in Political Science, New Directions in Public, Non-Profit and Community Leadership** option.

Click here to learn about the **requirements for the Public, Non-Profit and Community Leadership Graduate Certificate**.

Click here to learn about the requirements for the **Labor Leadership Certificate**.

## **Fourth World Center for the Study of Indigenous Law and Politics**

**Executive Director:** Glenn T. Morris

**Telephone:** 303-315-1762

This center provides a research clearinghouse to students and faculty at CU Denver on legal and political issues that affect indigenous peoples (the Fourth World). In addition to supporting a modest library of rare books and periodicals on indigenous issues, the center also stocks video and audio resources on subjects of indigenous politics and a substantial news file archive on current developments in the Fourth World. The center has produced curricular materials, including the *Fourth World Bulletin*, for use in international relations and area-studies courses.

## **Center for NEW DIRECTIONS in Politics and Public Policy**

**Director:** Minsun Ji

**Website:** <https://clas.ucdenver.edu/newdirections/>

This center provides academic programs, courses and research focused in the areas of politics and public policy with the purpose of developing the leadership capacities necessary to address changing public priorities for the 21st century within neighborhoods, communities, governmental jurisdictions, labor organizations, and nonprofit entities. Students in the Center's academic programs include working professionals in public and non-profit sectors; elected officials; community activists; interest-group stakeholders; educators from a wide range of demographic, occupational,

and personal backgrounds; and simply concerned citizens. The New Directions program offers professional internships with a wide variety of political jurisdictions, community-based groups, and labor organizations across Colorado, including several funded internships.

The center offers both undergraduate and graduate degrees in political science with emphases in public policy and administration.

Click here to learn about the **requirements for the Masters in Political Science, New Directions** option.

## Programs

### Certificate

# LABOR LEADERSHIP CERTIFICATE

## Introduction

Please click here to see Political Science department information.

The Labor Leadership certificate is meant to develop the next generation of leaders in labor unions and civic organizations focused on labor and related issues of race, class and gender equity. The certificate is particularly relevant to labor union leaders, rank and file members, and community-based organizational staff who desire to receive continuing education regarding labor leadership. The labor leadership certificate will combine academic instruction with field learning and community-based research projects. The program features active partnerships with local labor organizations, such as unions and community-based groups focused on relevant labor, class and race issues (such as immigrant rights groups, workplace gender equity groups, etc.). Certificate students will join a diverse group of graduate students pursuing their full Master's degree in the Department's community leadership program (including students focused on governmental/public leadership, and students focused on non-profit leadership) which will enhance synergetic learning in the classroom, and enlarge networking opportunities among all students.



The certificate is open to non-degree seeking as well as students formally admitted to the MA in Political Science program. The Certificate can be earned as a stand-alone University certificate, or it can be applied to a current or future degree program. Non-degree seeking students who successfully complete the certificate program would be allowed to transfer in the credits received in the certificate program to complete the Master's Degree in Political Science.

The certificate can be earned either through our traditional on-campus graduate seminars, or entirely through classes offered in a weekend-intensive format in our New Directions graduate program. Students may take classes in either format desired.

## **Admissions and Declaring this Certificate**

Any current or potential student wishing to declare this certificate should schedule a certificate advising appointment with either the Director of the New Directions graduate program (Dr. Minsun Ji) or with the Director of the On-campus Graduate Program (Dr. Michael Berry), in order to register their intent to pursue the Labor Leadership Certificate and to develop a curriculum plan.

## **Grade Requirements**

Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.

## **Curriculum and Credit Requirements**

The graduate certificate requires five Labor Leadership courses (15 credits)

## **Required Labor Leadership Courses**

Take **all** of the following courses

- PSCI 5535 - Labor and Working Class Politics
- PSCI 5548 - Labor Law and Collective Bargaining
- PSCI 5550 - Labor, Trade Unions and the Global Economy

## **Elective Labor Leadership Courses**

Take **two** of the following courses

- PSCI 5326 - Advanced International Political Economy: Globalization
- PSCI 5424 - The Social Economy and Sustainable Development

- PSCI 5434 - The Cooperative Movement: Politics and Policy
- PSCI 5914 - Community Organizing and Community Development

# PUBLIC, NONPROFIT AND COMMUNITY LEADERSHIP GRADUATE CERTIFICATE

## Introduction

Please click [here](#) to see Political Science department information.

The Public, Non-Profit and Community Leadership Graduate Certificate is offered in two different formats: the traditional, on-campus format, and the New Directions weekend classes format, with classes offered in CU Denver facilities south of Denver (currently at the Liniger Building in Parker). Students can choose classes in either of these two formats to complete the certificate.

The CU Denver Political Science Department's Public, Non-Profit and Community Leadership Certificate engages students in a focused curriculum in the local public leadership, and in the community organizing and development field, including field placements in internships with local community partners. The certificate is tailored to meet the needs of individuals in public and non-profit positions that require development of their leadership competencies and for individuals in informal community leadership positions who want to build their knowledge, skills, and effectiveness.

The program curriculum is anchored around the study and practice of local civic engagement, especially in traditionally marginalized communities. Students will be connected to meaningful work and networking opportunities in local government or in community settings, through community-based coursework, professional internships and service-learning opportunities. The certificate program provides critical education and effective skills-based training for students seeking careers in local government, in non-profit organizations, or in community organizing and development work. Students will be prepared to become change agents in their communities, while developing possible career paths in community-based advocacy/service organizations, public agencies, or international development work.

The certificate is open to non-degree seeking students (with or without an undergraduate degree) as well as students formally admitted to the MA in Political Science and to upper division undergraduates seeking to get a head start on their graduate studies. The Certificate can be earned as a stand-alone University certificate, or it can be applied to a current or future degree program. Non-degree seeking students

who successfully complete the certificate program would be allowed to transfer in the credits received in the certificate program to complete the Master's Degree in Political Science.

The certificate can be earned either through our traditional on-campus graduate seminars, or entirely through classes offered in a weekend-intensive format in our New Directions graduate program. Students may take classes in either format desired.

## **Admissions and Declaring This Certificate**

Any current or potential student wishing to declare this certificate should schedule a certificate advising appointment with either the Director of the New Directions graduate program (Dr. Minsun Ji) or with the Director of the On-campus Graduate Program (Dr. Michael Berry), in order to register their intent to pursue the Community Leadership Certificate and to develop a curriculum plan.

## **Grade Requirements**

Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.

## **Curriculum and Credit Requirements**

The graduate certificate requires four "public and community leadership" courses (12 credits), which must include PSCI 5914 - Community Development and an appropriate field study course (most usually an internship with a local government jurisdiction or community based organization).

## **Required Public and Community Leadership Courses**

- PSCI 5914 - Community Organizing and Community Development

Field Placement Requirement, fulfilled by one of the following courses

- PSCI 5939 - Internship
- PSCI 5944 - CU in the City

## **Elective Public and Community Leadership Courses (6 credits)**

- PSCI 5840 - Independent Study: PSCI (when relevant and approved by Program Advisor)
- PSCI 5548 - Labor Law and Collective Bargaining
- PSCI 5555 - International Women's Resistance
- PSCI 5414 - Non-Profits and Social Change
- PSCI 5424 - The Social Economy and Sustainable Development
- PSCI 5434 - The Cooperative Movement: Politics and Policy
- PSCI 5265 - Social Justice And Globalization
- PSCI 5274 - Conflict Resolution and Public Consent Building
- PSCI 5094 - Seminar: Urban Politics
- PSCI 5206 - Social Movements, Democracy and Global Politics
- PSCI 5024 - State Politics: Focus on Colorado
- PSCI 5025 - Local Governance and Globalization
- PSCI 5075 - Gentrification and Social Equity
- PSCI 5084 - Local Government and Administration
- PSCI 5008 - Graduate Topics in Political Science (when relevant and approved by Program Advisor)

Public Leadership Course credits may also be earned through study abroad in the Semester in Berlin program or the Development in East Africa program.

### **Dual Degree**

# **4+1 INTERNATIONAL STUDIES BA TO POLITICAL SCIENCE MA**

► Graduate School Policies and Procedures apply to this program.

## **Introduction**

Please click [here](#) to see Political Science department information.

Students will follow the undergraduate curriculum for International Studies and work closely with their faculty advisor to begin taking Political Science graduate level coursework as they complete their undergraduate degree. They will complete no more than 15 credits as an undergraduate that will apply to both their undergraduate and graduate degrees. Students may officially declare their intent to complete this program in either their junior or senior year, and may apply to the graduate program during their senior year. Application requirements may differ from the traditional 2 year MA, which is

why students need to work closely with faculty advisors and the political science graduate program director for more information and to ensure they are following the best track to complete coursework so that they only have one year after completing the undergraduate degree, to complete the graduate requirements.

## **Program Delivery**

- This is an on-campus program.

## **Declaring This Program**

- Click here to go to information about declaring a major.
- Application process: Interested students would submit a short application to the Department any time after the first semester of their junior year. The application will include:
  - A Letter of interest that describes the student's reasons for applying into the program.
  - Undergraduate transcripts.
  - The names of at least two faculty members in the CU Denver Political Science Department who can attest to applicant's advanced levels of reading, writing and analytical skills, and to their outstanding intellectual curiosity and work ethic.
  - Following review and admission by the faculty, students would begin their 4+1 curriculum during the second semester of their junior year, or in a subsequent semester.

## **General Requirements**

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements
- CU Denver Core Curriculum
- College of Liberal Arts & Sciences Graduation Requirements

[Click here](#) for information about Academic Policies

## **Program Requirements**

1. A minimum of 48 undergraduate credit hours in the International Studies program and 33 graduate credits hours in Political Science must be completed to earn both an undergraduate and a graduate degree through this 4+1 program.
2. Up to 15 graduate level credit hours in Political Science may be taken by International Studies undergraduates accepted to the 4+1 program, and these

credits will count both towards completion of the International Studies undergraduate degree, and the graduate degree in political science, if the student is later accepted into the graduate program.

3. A minimum of 21 semester hours must be taken from CU Denver faculty.
4. Complete all International Studies undergraduate major requirements. Refer to the undergraduate International Studies catalog page.
5. To secure admission to the Political Science graduate program, submit formal graduate application during the senior year.
6. Students must earn a minimum grade of C- (1.7) in all undergraduate major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 2.5.
7. Students must earn a minimum grade of B- (2.7) in any graduate level course for it to later be counted towards graduate degree requirements.
8. All graded attempts in required and elective courses are calculated in the major GPA. No course taken as pass/fail may be counted.

## **Program Allowances and Restrictions**

In the pathway below no more than 15 undergraduate credit hours may “double-count” for the M.A.. Elective courses must be in accordance with Graduate School Policies. Therefore, meeting with an advisor regularly is recommended. Apply into 4+1 Program any time after the first semester of junior year standing as an undergraduate.

# **4+1 POLITICAL SCIENCE BA TO MA**

- ▶ Graduate School Policies and Procedures apply to this program.

## **Introduction**

Please click [here](#) to see Political Science department information.

Students will follow the undergraduate curriculum for Political Science and work closely with their faculty advisor to begin taking Political Science graduate level coursework as they complete their undergraduate degree. They will complete no more than 15 credits as an undergraduate that will apply to both their undergraduate and graduate degrees. Students may officially declare their intent to complete this program in either their junior or senior year, and may apply to the graduate program during their senior year. Application requirements may differ from the traditional 2 year MA, which is why students need to work closely with faculty advisors and the political science graduate program director for more information and to ensure they are following the best track to

complete coursework so that they only have one year after completing the undergraduate degree, to complete the graduate requirements.

## Program Delivery

- This is an on-campus program.

## Declaring This Program

- Click here to go to information about declaring a major.
- Application process: Interested students would submit a short application to the Department early on during or after the first semester of their junior year. The application will include:
  - A Letter of interest that describes the student's reasons for applying into the program.
  - Undergraduate transcripts.
  - The names of at least two faculty members in the CU Denver Political Science Department who can attest to applicant's advanced levels of reading, writing and analytical skills, and to their outstanding intellectual curiosity and work ethic.
  - Following review and admission by the faculty, students would begin their 4+1 curriculum during the second semester of their junior year, or in a subsequent semester.

## General Requirements

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements
- CU Denver Core Curriculum
- College of Liberal Arts & Sciences Graduation Requirements

[Click here for information about Academic Policies](#)

## Program Requirements

1. A minimum of 39 undergraduate hours and 33 graduate hours of Political Science credits hours must be completed to earn both an undergraduate and a graduate degree through this 4+1 program.
2. A minimum of 21 semester hours must be taken from CU Denver faculty.
3. Up to 15 graduate level credit hours in Political Science may be taken by Political Science undergraduates accepted to the 4+1 program, and these credits will count both towards completion of the undergraduate degree, and the graduate

degree in political science, if the student is later accepted into the graduate program.

4. Complete all Political Science undergraduate major requirements. Refer to the undergraduate Political Science catalog page.
5. To secure admission to the Political Science graduate program, submit formal graduate application during the senior year.
6. Students must earn a minimum grade of C- (1.7) in all undergraduate major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 2.0.
7. Students must earn a minimum grade of B- (2.7) in any graduate level course for it to later be counted towards graduate degree requirements.
8. All graded attempts in required and elective courses are calculated in the major GPA. No course taken as pass/fail may be counted.

## **Program Allowances and Restrictions**

In the pathway below no more than 15 undergraduate credit hours may “double-count” for the M.A.. Elective courses must be in accordance with Graduate School Policies. Therefore, meeting with an advisor regularly is recommended. Apply into 4+1 Program any time during or after the first semester of junior year standing as an undergraduate.

### **Master of Arts**

# **NEW DIRECTIONS IN PUBLIC, NON-PROFIT AND COMMUNITY LEADERSHIP, POLITICAL SCIENCE MA**

► Graduate School Policies and Procedures apply to this program.

**Director:** Minsun Ji

**E-mail:** minsun.ji@ucdenver.edu

The Public, Non-profit and Community Leadership track of the political science MA program is offered off-campus through the Center for New Directions at CU Denver South in Parker, CO. The Center for New Directions offers an MA program focused on public leadership, community labor organizing, and social economy innovations, in collaboration with community and labor organizations and local government jurisdictions across Colorado. The program seeks to develop the public leadership & community



organizing capacities necessary to address challenges and leadership & community organizing capacities necessary to address challenges and opportunities within neighborhoods, communities, government jurisdictions, and non-profit entities.

In addition to their standard coursework, students in this Masters program are encouraged to be involved in experiential learning through professional internships, community-based action research opportunities, and other practicums made available to students through the program's many university-community partnerships, including the possibility of full-time, salaried internships with rural and small jurisdictions across Colorado. Through partnerships with government jurisdictions across the state, and with non-profits and community-based organizations, New Directions seeks to build community power and identify policy solutions to local challenges.

This program presents courses in an intensive weekend format, allowing students to complete their masters entirely through weekend or online courses.

## **Degree Requirements**

1. Students must complete a total of 33 PSCI graduate credit hours to complete the MA degree.
2. Students must earn a minimum grade of B- (2.7) in all masters courses taken at CU Denver and must achieve a minimum cumulative masters GPA of 3.0. All graded attempts in required and elective courses are calculated in the masters GPA. Students cannot complete the masters or ancillary course requirements as pass/fail.

## **Required Core Courses**

- PSCI 5914 - Community Organizing and Community Development
- PSCI 5468 - Research Methods in Political Science
- PSCI 5960 - Master's Project

**Total: 9 Hours**

## **Electives**

In addition to the required core courses, students must take 24 credit hours of political science electives.

**[Note:** Previously earned graduate credit may be submitted for approval to satisfy up to nine hours of the supportive elective requirement. The elective courses offered may change from time to time based on needs, interests and other factors.]

Elective courses in the New Directions program are offered in three different "tracks" of study, allowing students to choose their particular interest and focus their studies on

that subject. The three tracks are: Local Governance, Community and Labor Organizing, and The Social Economy and Sustainable Development.

Students are encouraged to focus their studies by taking courses within a chosen track, but it is *not* required that students only take courses within a single track (and some courses fit in more than one track).

1. **Local Governance:** Curriculum focuses on educating students who are interested in working in local and state government sectors, or with public policy research and advocacy organizations. Curriculum and community partnerships in this area focus on local government and administration, the politics of government finance, state politics and public policy challenges.
2. **Community and Labor Organizing:** Curriculum focuses on developing diverse theoretical and practical courses in labor and community organizing politics, history and strategies. Courses focus on social movement theories, labor union politics, and community organizing strategies to help students develop theoretical foundations and practical strategies for more effective community and labor leadership.
3. **The Social Economy and Sustainable Development:** Curriculum focuses on developing an understanding of the current political-economic systems, and on exploring alternative and diverse economic strategies that might work to the benefit of less privileged communities. Courses and community partnerships allow students to explore democratic financial systems, land trusts, and worker cooperatives, and other such innovative “social economy” practices, at the local, national and global levels. In this track, students will learn of diverse economies theory, innovative economic development strategies in both rural and urban areas, the worker cooperative movement, and innovative financial strategies that work for less privileged communities.

Below is a list of some regularly offered elective courses in the New Directions program. All courses in our graduate catalog are available to be offered as electives in the New Directions program.

- PSCI 5545 - Immigration Politics
- PSCI 5548 - Labor Law and Collective Bargaining
- PSCI 5354 - Seminar: Environmental Politics and Policy
- PSCI 5424 - The Social Economy and Sustainable Development
- PSCI 5434 - The Cooperative Movement: Politics and Policy
- PSCI 5457 - Seminar: American Political Thought
- PSCI 5265 - Social Justice And Globalization
- PSCI 5274 - Conflict Resolution and Public Consent Building
- PSCI 5206 - Social Movements, Democracy and Global Politics
- PSCI 5014 - Seminar: American Politics
- PSCI 5024 - State Politics: Focus on Colorado
- PSCI 5075 - Gentrification and Social Equity
- PSCI 5084 - Local Government and Administration

- PSCI 5085 - Comparative Governance: Environment and Society
- PSCI 5009 - Politics of the Budgetary Process
- PSCI 5414 - Non-Profits and Social Change

**Total: 24 Hours**

## **Project Requirement**

All students are required to complete a 3-credit master's project under the direction of a faculty advisor. Registration is done using the Special Processing form, rather than online.

- PSCI 5960 - Master's Project

**Total: 3 Hours**

## **Course Format**

All courses are offered in a weekend format that consists of three weekend sessions for a given course, spread out over a two or three month period. Weekend classes are held from 9:00 am to 4:00 pm on both Saturday and Sunday of each weekend session. In most cases, a student will complete all of the weekend sessions of one course before starting the weekend sessions for the next course. There is typically a two to three week break between each weekend of class-time in a given course.

**Major Total: 33 Hours**

## **Certificate Program**

The Center for New Directions MA program offers two certificate programs:

- Public, Non-Profit and Community Leadership
- Labor Leadership Certificate

These certificate programs allow students to focus their studies in a particular direction and to note that particular focus on their transcript. Students do not have to be seeking a full Master's degree to earn a certificate of completion through the certificate program.

For more information on these graduate certificates, click the links above.

# POLITICAL SCIENCE MA

► Graduate School Policies and Procedures apply to this program

**Director:** Michael Berry

**E-mail:** michael.berry@ucdenver.edu

## Introduction

The Political Science Department offers a Master of Arts (MA) degree in Political Science with an emphasis on building academic and practical skills in key areas of the discipline. Research and teaching in the department centers on the major fields of American politics, comparative politics, international relations, political theory and public policy. The department also offers more specialized training in community organizing, human rights, legal studies, gender politics, race and ethnic politics, European studies, indigenous politics and urban politics. Students pursuing the MA have the option of completing the traditional track or an “alternative” track centered on public, non-profit and community leadership. Students completing the alternative “public, non-profit and community leadership” track take most courses on weekend, off-campus locations. Students completing either track have gone on to PhD programs across the country and work in a variety of areas, including: state and local elected office, government service, community organizing and development work, nongovernmental organizations, legislative analysts, UN affiliates, lobbyists, teachers, media analysis and political consulting.

## Requirements for Admission

Students applying for admission to the MA program in political science should present at least 18 semester hours of previous academic work in political science, at least 9 hours of which should be at the upper-division or graduate level. The department may make exceptions to these requirements in unusual cases (for instance, if course work in related fields such as psychology, economics and history compensates for the deficiencies in political science). Applicants should present an undergraduate GPA of at least 3.0 to be considered. In their applications, students must submit transcripts and letters of recommendation (from academic sources) as specified by the Graduate School. In addition, applicants must submit a statement of academic objectives and an academic writing sample. Standardized test scores are not required of applicants, but will be considered if submitted. Program applicants who face difficulties in meeting these requirements should reach out for individual discussion with our Graduate Program director (for example, if an undergraduate GPA is below 3.0, or if letters of recommendation from professors taken years ago are hard to obtain).

In order to take graduate courses in political science, students must either be admitted to the MA program or secure permission to take courses as a non-degree student. Non-degree students interested in our certificate programs or in taking graduate courses for any reason should reach out to the Department Graduate Advisor to secure admission to courses as a non-degree seeking student.

## **Program Requirement Overview**

1. Students must complete 33 credit hours.
2. Students must earn a minimum grade of B-(2.7) in all masters courses taken at CU Denver and must achieve a minimum cumulative masters GPA of 3.0. All graded attempts in required and elective courses are calculated in the masters GPA. Students cannot complete masters or ancillary course requirements as pass/fail.
3. Students must complete a minimum of 16 credits with CU Denver Political Science faculty.
4. Students who are on probation must meet regularly with the graduate advisor and must secure approval from the advisor for all course work while on probation.

## **Degree Requirements**

In addition to the requirements for admission and details of the program spelled out here, graduate students in political science must also abide by department rules and procedures specified in the Graduate School Policies and Procedures. Failure to meet these policies may result in a student being dropped from the program.

Under the On-Campus MA program in political science, two degree plans are available:

- Plan I requires the completion of nine graduate courses (27 semester hours) and a 6-credit thesis
- Plan II requires the completion of ten graduate courses (30 semester hours) and a 3-credit project or portfolio.

## **Required Core Classes**

Course work in both plans completed under the traditional track offered on the Downtown Campus must include the following two courses

- PSCI 5000 - State of the Discipline
- PSCI 5468 - Research Methods in Political Science

## **Elective Courses**

Students will complete between 12 and 15 elective semester hours, depending on whether they are working under Plan I or II. Elective courses must include at least one graduate seminar in each of the following three areas: 1) American politics, 2) Comparative politics/International Relations, and 3) Political Theory. Please see the Department graduate director, if you have questions as to which category a course might fit under.

In addition to taking regularly offered graduate seminars in the program, students may meet their elective requirements by taking independent study, internships, or graduate courses in related disciplines. These courses all require approval from the Graduate program director, or from a sponsoring faculty member in the Department. The total combination of independent study, graduate course work in related disciplines and internships cannot exceed 9 semester hours.

## **Alternative Political Science Masters Program: The New Directions Program**

In addition to its traditional, on-campus Masters degree, the Political Science Department offers a Public, Non-Profit and Community Leadership MA program through the Center for New Directions at CU Denver South in Parker, CO. The Center for New Directions offers an MA program focused on public leadership, community labor organizing, and social economy innovations, in collaboration with community and labor organizations and local government jurisdictions across Colorado. The program seeks to develop the public leadership & community organizing capacities necessary to address challenges and leadership & community organizing capacities necessary to address challenges and opportunities within neighborhoods, communities, government jurisdictions, and non-profit entities.

Plan II is available both under the traditional MA track offered on the Denver campus, as well as through an alternative track offered off-campus through the Center for New Directions in Politics and Public Policy. For details about this off-campus track in politics and public policy, see New Directions, MA in Political Science.

The Political Science graduate program offers three transcribed certificates, allowing students to focus their studies in a particular direction and to note that particular focus on their transcript. Students do not have to be seeking a full Master's degree to earn a certificate of completion through the certificate program.

- Public, Non-Profit and Community Leadership
- Labor Leadership

For more information on these graduate certificates, click the links above.

# POLITICAL SCIENCE MA / MASTER OF BUSINESS ADMINISTRATION (MBA) DUAL DEGREE

► Graduate School Policies and Procedures apply to this program.

In the 21st century, the fields of business administration and political science intersect, in that sustainable business development requires an understanding of the political environment, while political theory and practice must address the role of the business community in economic development. Providing students with both the business foundation and political knowledge enhances their ability to succeed in our ever-changing political world.

The CU Denver Master of Arts in Political Science (MA) degree offers an in-depth understanding of the political environment, locally, nationally and globally, emphasizing the development of academic and practical skills in key areas of the discipline, and centering on the major fields of American politics, comparative politics, international relations, political theory and public policy. The CU Denver Master of Business Administration (MBA) degree provides a strong foundation in business knowledge in such areas as organizing teams, developing marketing plans, using data analysis and technology in decision making, economics, financial management and strategic planning. The MBA develops skills required for competent and responsible administration of an enterprise viewed in its entirety, within its social, political and economic environment.

The Dual Master's Degree in Political Science (MA) and Business Administration (MBA) is designed for students whose interests overlap business and politics or business and international affairs. This program is jointly sponsored by the Department of Political Science of the College of Liberal Arts and Sciences and the Business School. This program enables students to simultaneously earn an MA in Political Science with an MBA.

The dual degree program provides a more comprehensive education to the next generation of professionals in the non-profit sector, corporate arena and governmental organizations. Dual degree students are able to complete both degree programs in less time, and with fewer total credit hours (66 for both), than if both degrees were pursued separately (48+33 = 81). The program keeps the core of each program intact, including some electives from both programs, and enables students to choose two additional electives from either business or political science to best suit their career and personal

goals. Furthermore, the interactions between the students enrich the students in both programs, as well as the organizations that employ them.

## **Admission Requirements**

Students must apply separately to, meet the admission requirements of, and be accepted by each program. It is possible for students currently admitted to one program to learn about the dual degree and choose to apply after admission to the other program.

## **GPA Requirements**

Students must maintain a cumulative GPA of 3.0 or higher across all courses that are applied to the dual degree. Any political science course in which a student receives a final grade lower than B- cannot be counted toward the total credits for the dual degree. Any business course in which a student receives a final grade lower than C cannot be counted toward the total credits for the dual degree. All graduate courses will be included in the cumulative GPA.

## **Transfer Credits**

No more than 9 semester hours of business credits from an AACSB Business School with a grade of B or better and no more than 6 semester hours of political science credits may be transferred into this dual degree program. The Business School will evaluate transfer hours in business and the Political Science Department will evaluate transfer hours in political science.

## **Graduation**

Students must complete all the requirements for both programs before they apply to graduate, and must apply to graduate in the same term for both programs.

## **Degree Requirements**

### **MBA Core (30 Hours)**

- BUSN 6520 - Leading Individuals and Teams
- BUSN 6530 - Data Analytics for Managers
- BUSN 6540 - Legal and Ethical Environment of Business
- BUSN 6550 - Analyzing and Interpreting Accounting Information
- BUSN 6560 - Marketing Dynamics in the 21st Century
- BUSN 6610 - Information Systems Strategy
- BUSN 6620 - Applied Economics for Managers
- BUSN 6630 - Management of Operations



- BUSN 6640 - Financial Management
- BUSN 6710 - Strategic Management

## **International Elective (3 Hours)**

Any course numbered 6000 or higher with the INTB prefix

or

ENTP 6826 - International Entrepreneurship

or any graduate-level business course that is cross-listed with an INTB prefix. Travel study offered by the Business School will also apply.

## **Political Science Core (18-21 Hours)**

- PSCI 5000 - State of the Discipline
- PSCI 5468 - Research Methods in Political Science

Graduate Seminar in American Politics subfield

Graduate Seminar in Comparative or International Politics subfield

Graduate Seminar in Political Theory subfield

PSCI 5950 - Master's Thesis (6 credits)

OR

PSCI 5960 - Master's Project (3 credits)

## **Political Science Electives (6-9 Hours)**

PSCI graduate seminars [must complete 6 hours if thesis, or 9 hours if project (from Political Science Core)]

## **Free Electives (6 Hours)**

Courses must be from either the Business School or Political Science department, meeting the descriptions below. A combination of both is also acceptable.

**Business Free Electives:** Any course numbered 6800 or higher with a BUSN prefix or any course numbered 6000 or higher with a prefix of ACCT, DSCI, ENTP, FNCE, HLTH, INTB, ISMG, MGMT OR MKTG.

**Political Science Electives:** Any course numbered 5000 or higher with a PSCI prefix.

# PSYCHOLOGY

**Chair:** Peter S. Kaplan

**Administrative Assistant:** Kimberly Hill

**Director, Clinical Health Psychology Ph.D. Program:** Amy Wachholtz

**Coordinator of Clinical Training:** Edward Dill

**Program Assistant:** Anne Beard

**Director, Psychological Services Center:** Edward Dill

**Office:** North Classroom, 5002

**Telephone:** 303-315-7050

**Fax:** 303-315-7072

**Website:** <https://clas.ucdenver.edu/psychology/>

## Faculty

### Professors:

Richard Allen, PhD, University of North Carolina at Chapel Hill

James Grigsby, PhD, University of Colorado

Mitchell M. Handelsman, PhD, University of Kansas

Peter S. Kaplan, PhD, Indiana University

Kevin S. Masters, PhD, Brigham Young University

### Associate Professors:

David Albeck, PhD, University of Colorado

Elizabeth Sandlin Allen, PhD, University of North Carolina at Chapel Hill

Joy L. Berrenberg, PhD, University of Colorado

Sondra Bland, PhD, University of Texas

Kristin Kilbourn, PhD, University of Miami

Erik Oleson, PhD, Wake Forest University

Krista W. Ranby, PhD, Arizona State University

Amy Wachholtz, PhD, Bowling Green University

Jason Watson, PhD, Washington University

Michael Zinser, PhD, University of Wisconsin, Madison

### Assistant Professors:

Edward Dill, PhD, University of Kansas

Benjamin Greenwood, PhD, University of Colorado, Boulder

Carly Leonard, PhD, Johns Hopkins University

Jonathan Schaffer, PhD, St. John's University

Sneha Thamocharan, PhD, Texas A&M University

### Associate Professor, Clinical Teaching Track:

Joan Bihun, PhD, Wayne State University

Kevin Everhart, PhD, University of South Carolina

**Assistant Professor, Clinical Teaching Track:**  
Vivian Shyu, PhD, University of Denver

**Senior Instructors:**  
Bethann Bierer, PhD, University of Denver

**Emeritus Professors:**  
Rick M. Gardner, PhD, University of Nevada  
Barbara Walker, PhD, The Ohio State University

Psychology is the scientific study of behavior, consisting of the following major areas of study: experimental psychology, biopsychology, animal behavior, developmental psychology, social psychology, cognitive psychology, personality, industrial/organizational psychology and abnormal psychology.

## **Graduate Program**

The Psychology department offers a Master of Arts (MA) degree in Psychology with an emphasis in clinical psychology that is earned en route to the doctor of philosophy (PhD) degree in Clinical Health Psychology. Our program trains students within the context of the scientist-practitioner model. That is, we value an integrated approach to both the science and practice of clinical psychology. Our training emphasizes the contribution of research to the understanding, treatment and prevention of human problems, and the application of knowledge that is grounded in scientific evidence.

Click [here](#) to learn about the **requirements for the PhD in Clinical Health Psychology**.

# **PSYCHOLOGY, CLINICAL HEALTH PSYCHOLOGY PHD**

► Graduate School Policies and Procedures apply to this program

## **Objectives of the Program**

Clinical health psychology focuses on the interaction between psychological, physiological, and environmental factors as they influence health and well-being. This emphasis includes focus on: 1) the development of effective disease prevention behavioral interventions for individuals and populations at high risk for medical problems; and 2) the development of strategies to help individuals who are already ill to manage their disease and to increase their ability to collaborate with medical professionals and improve their coping skills. A clinical health psychologist combines expertise in research on health psychology with training in clinical psychology. Students

in this program are trained to work within the community to use clinical psychological skills and techniques to diagnose and treat mental health conditions, promote health and prevent illness, apply behavioral interventions in the treatment of illness, and improve the health care system. In addition to course work, students acquire expertise in research by completing both a master's thesis and doctoral dissertation. They demonstrate competence in clinical assessment and intervention through several applied practicum experiences, successful passage of the Comprehensive Clinical Competency Examination and successfully completing a pre-doctoral psychology internship. Students can complete the program in five years and have up to eight years to complete the program according to Graduate School Policies and Procedures.

## **Admissions**

The application deadline for receipt of all student information is November 15 for the following fall. You are responsible for making sure all materials are in on time. International students should be sure to submit all materials at least two weeks before this deadline (by November 1) so that they arrive at our department on time.

### **Admission Requirements:**

- BA or BS from an accredited college or university, with a minimum GPA of 3.5 based on all college course work.
- Undergraduate courses in: introductory psychology, psychological statistics, research methods and abnormal psychology. Additional courses in psychology are highly desirable; our admissions committee will also look favorably upon courses in the biological and physical sciences.
- Two official transcripts from each college and university attended.
- Graduate Record Exam (GRE): The GRE General Test (verbal, quantitative, analytical writing) is required. Most students in the program had a combined verbal and quantitative score of at least 1100 on the old GRE scoring system. The GRE should be taken at least six weeks before the November 15 deadline so that the scores arrive on time.
- Three letters of recommendation, at least two of which must be academic references. Applicants provide contact information for their references in the online application. Those individuals are automatically contacted electronically and asked to upload their recommendations directly to your application file.
- The online Graduate Application, including your resume/vita and personal statement.
- Application fee of \$50 (\$75 for international students).

## **Financial Information**

The University of Colorado Denver administers various forms of financial aid for graduate students: fellowships, scholarships and a number of awards from outside agencies. See the Office of Financial Aid for further information. Additionally, the psychology department offers teaching assistantships each year in such courses as introductory psychology, statistics, research methods and human development. Although we do not guarantee TA positions, we have been able to offer positions to our interested students.

Contingent upon the availability of grant money, faculty may also offer part-time research assistantships to qualified students. The typical RA position involves data collection and analysis, library research, etc. Some computer and statistical skills are usually required. RA positions are less available than TA positions, and they may arise on very short notice.

In-state tuition waivers and additional stipend monies may be available for doctoral students. We do guarantee to pay a full stipend, usually in the form of an assistantship, plus tuition for the first year. We will make every effort to do so for four years.

**Note:** Neither teaching nor research assistantships confer in-state tuition status.

## **Degree Requirements**

### **Course Work:**

The program requires approximately eight semesters of full-time course work and clinical practica, followed by a year-long internship. Students must maintain a 3.0 grade point average, and no grade below a B will count toward the requirements. Students must successfully complete their doctoral dissertation proposal prior to applying for their internship in the 5th year and are strongly encouraged to defend their dissertation prior to beginning their internship. Students can complete the program in five years and have up to eight years to complete the program, according to Graduate School Policies and Procedures.

### **Master's Thesis:**

The program has a provision for achieving a master's degree en route to obtaining the PhD. In addition to taking PSYC 8200, Teaching Skills Seminar, a master's degree is required for students to independently teach a course. During their time in the program, students' funding will likely require them to independently teach a course. Students must complete a master's thesis, an empirical research project that makes a significant contribution to the field. Although the thesis must address the student's own original question, the use of archival data and pilot studies is encouraged for this project.

### **Clinical Practica:**

A minimum of 500 face-to-face intervention and assessment hours and 1200 total practicum hours [face-to-face intervention and assessment hours, plus supervision, plus support hours as defined by the Association of Psychology Postdoctoral and Internship Centers (APPIC)] are expected in preparation for application to pre-doctoral internships. Approximately 50% of required practica are typically conducted in medical settings. Sites for practica training, include the department's own Psychology Clinic and external facilities such as outpatient diabetes clinics, cancer clinics, OB/GYN, HIV/AIDS, end-stage renal disease, pain, and cardiovascular clinics, and in-patient psychiatric facilities. Students are able to select practica based on their personal and professional interests. All field placements are approved in advance by the Coordinator of Clinical Training.

### **Demonstration of Clinical Competency:**

During the first semester of their third year in the program students must demonstrate their clinical competency by completing the Comprehensive Clinical Competency Examination (CCCE). The CCCE is designed to facilitate student demonstration of clinical competence at the developmental level of readiness for application to clinical internship. This evaluation is designed to assess the developmentally appropriate broad and general clinical competencies in clinical psychology, and does not necessarily evaluate clinical health psychology competencies per se. The CCCE comprises three sequential components conducted in phases:

1. Applied clinical diagnosis and assessment planning for a standardized patient.
2. Case conceptualization and treatment planning for a standardized patient. .
3. Intervention therapy session with a standardized patient and oral defense with a faculty committee.

### **Dissertation:**

Students must complete a dissertation that involves original empirical work and is distinct from other research projects and publications. The dissertation proposal must be completed and defended prior to making application for the pre-doctoral internship. Students must have a dissertation committee composed of four members of the graduate faculty. When the dissertation is completed to the satisfaction of the primary advisor, the student must orally defend the dissertation to the committee.

### **Internship:**

Students must complete a 12-month, full-time pre-doctoral clinical internship, preferably at an APA-accredited site. This internship is required of all clinical psychologists and is the capstone of clinical training in the doctoral program.

### **Courses**

- PSYC 6950 - Master's Thesis
- PSYC 7144 - Advanced Cognition and Emotion

- PSYC 7205 - Advanced Developmental Psychology
- PSYC 7220 - Advanced Biological Bases of Behavior
- PSYC 7262 - Health Psychology I
- PSYC 7350 - Psychotherapy I
- PSYC 7360 - Psychotherapy II
- PSYC 7410 - Assessment I: Personality
- PSYC 7420 - Assessment I: Intellectual and Cognitive Assessment
- PSYC 7485 - Diversity in Clinical Psychology
- PSYC 7490 - Topics in Health Psychology Summer Lecture Series
- PSYC 7500 - Advanced Psychopathology
- PSYC 7511 - Historical and Philosophical Foundations of Psychology
- PSYC 7700 - Clinical Research Methods
- PSYC 7710 - Multivariate Statistics
- PSYC 7713 - Advanced Statistics
- PSYC 7730 - Ethics and Professional Issues in Psychology
- PSYC 7910 - Clinical Practicum

Class Notes: Students should enroll in 1 credit hour during year one (spring and summer semesters only), 1 credit hour during year two (fall, spring, and summer semesters), and 3 credit hours during year three (fall, spring, and summer semesters). A total of 14 credit hours of PSYC 7910 are required.

- PSYC 7911 - Clinical Practicum II

Class Notes: Students should enroll in 2 credit hours during year two (fall, spring, and summer semesters). A total of 6 credit hours of PSYC 7911 are required.

- PSYC 8100 - Clinical Behavioral Medicine
- PSYC 8200 - Teaching Skills Workshop
- PSYC 8262 - Health Psychology II
- PSYC 8501 - Primary Care Psychology
- PSYC 8502 - Cardiovascular Health Psychology
- PSYC 8503 - Group Interventions in Health Psychology
- PSYC 8550 - Advanced Social Psychology
- PSYC 8910 - Advanced Clinical Practicum

Class Notes: Students should enroll in 3 credit hours during year four (fall and spring semesters only). A total of 6 credit hours of PSYC 8910 are required.

- PSYC 8938 - Pre-Doctoral Internship
- PSYC 8990 - Doctoral Dissertation

# SOCIAL SCIENCE, MASTER OF

**Director:** Omar Swartz, JD, PhD  
**Office:** Student Commons 3201  
**Program Assistant:** Angela Beale  
**Telephone:** 303-315-3565  
**Fax:** 303-315-3569  
**E-mail:** masterhs@ucdenver.edu  
**Website:** <https://clas.ucdenver.edu/mhmss/>

## **Faculty**

**Associate Professor:**  
Omar Swartz, JD, Duke University; PhD, Purdue University

**Assistant Professor:**  
Margaret L. Woodhull, PhD, University of Texas, Austin

**Visiting Assistant Professor:**  
Lorna Hutchison, PhD, McGill University

The Master of Social Science (MSS) program is designed to meet the needs of students who prefer flexibility in constructing an individualized course of study in social science. Emphasis is placed on the integration of knowledge across and beyond traditional disciplinary boundaries. This is accomplished through three required seminars, electives from a variety of disciplines chosen with the approval of advisors and program directors, and a project or thesis. Courses can be chosen from the social science disciplines: anthropology, communication, economics, geography, history, law, political science, psychology and sociology, as well as from select other disciplines and programs. The MSS program is intended for students interested in developing their own interdisciplinary perspectives in such areas as social thought, public policy, women's studies, educational reform, social justice and cross-cultural studies or politics. The program can provide: training for advancement in the professions of education, business, social service and government; a basis for further graduate studies in a specific social science discipline or professional field; a means for teachers and other working students to tailor degree programs to fit their personal career development needs; and a nontraditional approach for recent university graduates or adults re-entering the university to pursue liberal educational goals in the social sciences.

Click here to learn about the **requirements for the Master of Social Science** degree.

## **Programs**

**Master of Social Science**

# **SOCIAL SCIENCE MSS**



- ▶ Graduate School Rules apply to this program

## Requirements for Admission

General rules for admission into the Graduate School, as well as the following apply:

- evidence of a bachelor's degree
- an official copy of transcripts from all community colleges, colleges, and universities attended
- overall GPA of at least 3.2 out of 4.0
- a writing sample
- three letters of recommendation (at least two from academic sources)
- appropriate undergraduate training or professional background, or experience that provide evidence of ability to pursue the MSS degree
- a typed statement specifying the goal of advanced study in the social sciences expressed in clear, correct and effective English. Applicants should provide a statement of their background (education and experience) and its relevance to their proposed interdisciplinary graduate work, and why this graduate program is relevant to their interests.
- standardized test scores are not required, but will be considered if submitted

After meeting all other requirements for admission, applicants may be required to have an interview to discuss their interest in the program and their plans for study. For out-of-state applicants, an appropriate substitute for the interview may be determined by the directors.

### Provisional Admission:

Applicants may be admitted as provisional-status graduate students if their GPA is low and their complete record indicates a high probability of success.

### Non-degree Students:

Potential applicants may take CU Denver graduate-level courses as non-degree students (unclassified student with a bachelor's degree) if they:

1. wish to strengthen their record in order to demonstrate their potential to successfully complete courses in the program
- or-
2. wish to start coursework in the program prior to completing their application, with the understanding that taking courses does not guarantee admission.

Up to 12 semester hours of CU Denver graduate-level work taken as a non-degree student or taken from another university may be accepted by the program once a student has been admitted to the program. For further information on non-degree graduate student status, see the Information for Graduate Students section of this catalog. In the case of CU Denver graduate students transferring to the MSS program, previous coursework may be accepted as appropriate to the MSS plan of study.

## **International Students:**

International students must also meet CU Denver requirements for international admission. See the Information for International Students section of this catalog or call 303-315-2230 for further information.

## **Degree Requirements**

The Master of Social Science (MSS) is a 36 credit hour program, of which 30 hours must meet all specifications of the Graduate School . Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. A grade below B- in any given course will not be counted toward the degree. All graded attempts in required and elective courses are calculated in the major GPA. Courses credited toward the MSS degree must typically be taken at CU Denver (a maximum of 12 graduate semester hours may be transferred from other institutions after matriculating into the MSS program, subject to the MSS director's approval). Students wishing to pursue study abroad options must seek advisor approval in advance.

Students may pursue a general MSS degree or concentrate their studies and coursework on an approved track.

Each student's program is supervised by MHMSS faculty. All independent study, project, and thesis contracts must be approved in advance by the program director. A total of two independent study courses and one internship may count toward the degree. Only one graduate-level online course (up to 3 hours) may be taken toward the degree, with prior approval. A maximum of two 4000-level undergraduate courses may apply, with faculty approval. Remaining coursework must be 5000-level or higher and must be completed with CU Denver faculty or approved study away programs. All students must complete and pass a final project or thesis and an oral comprehensive defense of that work, in order to graduate.

## **Three Required Core Seminar Courses**

Take ***all*** of the following courses:

- SSCI 5020 - Foundations and Theories of Interdisciplinary Social Science

Must be taken during the first year, offered in the fall only.

- SSCI 5013 - Methods and Practices of Graduate Interdisciplinary Humanities

Must be taken during the first year, offered in the spring only.

- SSCI 5023 - Research Perspectives in Social Science

Students should take this course after they have completed 21-24 credit hours and are ready to write a proposal for their thesis or project. This course is always offered in the spring and occasionally in the fall, as needed.

### **Total: 9 Credit Hours**

### **Electives**

Students must complete a total of 21-24 credit hours. Students completing a project rather than a thesis take 24 hours of electives, while thesis students complete 21 hours of electives. Students may choose to create their own curriculum from at least two disciplines addressing their specific research interest. Alternatively, students may choose to follow an approved specialized track. Prior to taking electives, students must meet with a MHMSS program faculty advisor and establish their course of study. If students decide to change their course of study or want to substitute approved coursework, they must meet with a MHMSS program advisor in advance and gain pre-approval.

**Study Abroad:** Students wishing to count credits accrued from a study abroad program while pursuing the MSS must follow the rules of the Graduate School and must have approval of the program director in advance of studying abroad.

### **Total: 21-24 Credit Hours**

### **Thesis or Project**

In order to proceed with a project or thesis, all students must submit a proposal and gain approval from three faculty members and the program directors.

- SSCI 6950 - Master's Thesis
- SSCI 6960 - Master's Project or Report

### **Total: 3 or 6 Credit Hours**

### **Oral Exam**

An oral exam defending the project or thesis before a committee of three faculty members must be passed in order to graduate.

**Degree Total: 33-36 Credit Hours**

## **MSS Elective Pathways:**

### **General MSS Track**

Students pursuing the general MSS degree track create a course of study based on their individual interests and goals. In consultation with a faculty advisor, students choose two or three academic disciplines as areas of concentration. Students who opt to complete a thesis will submit a thesis proposal after completing 30 hours of course work. In the case of a project, students will submit a project proposal after 33 hours.

### **Specialized MSS Tracks**

Students may also focus in one of the tracks in the Master of Social Science program: ***Community Health, Ethnic Studies, International Studies, Social Justice, Society and the Environment, or Women and Gender Studies***. Tracks allow students to concentrate their studies in a defined field designed by faculty. Students who opt to complete a thesis will submit a thesis proposal after completing 30 hours of course work. In the case of a project, students will submit a project proposal after 33 hours.

### **Community Health Track**

The Community Health track focuses coursework on social and communication theory, demographics and ethnic dimensions to public health, basic research methods, and statistics, in order to facilitate development of problem solving and critical thinking skills in the areas of epidemiology, public health and public health education, and health planning.

*In addition to the MSS Core requirements, students must:*

***Complete 9 credit hours of approved methods courses from the following list- some of these courses have prerequisites that must be met:***

- HBSC 7041 - Research Design and Methods in the Health and Behavioral Sciences I
- ANTH 6063 - Qualitative Research Design and Methods
- HBSC 7061 - Quantitative Methods in the Health and Behavioral Sciences
- HBSC 7071 - Social and Behavioral Determinants of Health and Disease

**Complete a minimum of 6 credit hours of approved community health related elective coursework from the list below-substitutes may be approved by the student's advisor:**

- ANTH 5600 - Medical Anthropology
- ANTH 5290 - Anthropology and Public Health
- ANTH 5300 - Migrant Health
- COMM 5500 - Health Communication
- COMM 5550 - Rhetorics of Medicine & Health
- COMM 5620 - Health Risk Communication
- ECON 6210 - Public Finance
- ENV5 6230 - Environmental Epidemiology
- GEOG 5230 - Hazard Mitigation and Vulnerability Assessment
- GEOG 5235 - GIS Applications in the Health Sciences
- GEOG 5710 - Disasters, Climate Change, and Health
- HLTH 6010 - Health Care Systems
- HLTH 6070 - International Health Policy and Management
- PHIL 5242 - Bioethics
- PSCI 5354 - Seminar: Environmental Politics and Policy
- PUAD 5615 - Health Policy
- WGST 5345 - Gender, Science and Medicine: 1600 to the Present

**Complete a project or thesis on an approved community health related topic.**

### **Ethnic Studies Track**

The Ethnic Studies track explores the construction of race and ethnicity by governments and communities through the intersection of popular culture and public policy in both the historical and contemporary contexts.

*In addition to the MSS Core requirements, students must:*

**Complete at least one ethnic studies methods/theory course from the list below:**

- ETST 5000 - Research Methods in Ethnic Studies
- EDFN 5001 - Problematizing Whiteness: Educating for Racial Justice

**Complete a minimum of 12 credit hours of approved ethnic studies related elective coursework from the list below, substitutions may be approved by the student's advisor :**

- ANTH 5350 - Anthropology of Globalization
- COMM 5270 - Intercultural Communication
- EDFN 5050 - Critical Issues in American Education
- ENGL 5220 - African-American Literature

- ENGL 5460 - Contemporary World Literature
- HIST 5308 - Crime, Policing, and Justice in American History
- HIST 5412 - Mexico and the United States: People and Politics on the Border
- HIST 5415 - Social Revolutions in Latin America
- HIST 5455 - African Struggle for Independence
- HIST 5462 - Islam in Modern History
- HUMN 5770 - Imperialism, Post-Colonial Theory & Visual Discourse
- SSCI 5540 - Law, Diversity and Community in United States History
- PSCI 5094 - Seminar: Urban Politics
- PSCI 5145 - Indigenous Politics
- PSCI 5206 - Social Movements, Democracy and Global Politics
- PSCI 5245 - Gender, Globalization and Development
- PSCI 5256 - Seminar: National Question and Self-Determination
- PSCI 5446 - Advanced Indigenous Peoples' Politics
- PSCI 5545 - Immigration Politics
- PSCI 5914 - Community Organizing and Community Development
- SOCY 5050 - Health Disparities
- SOCY 5440 - Poverty and Social Inequality
- SOCY 5460 - Hate Groups and Group Violence
- SOCY 5690 - Crime and Inequality Over the Life Course
- SPAN 5020 - Spanish Sociolinguistics
- SPAN 5060 - Dialects of the Spanish-Speaking World
- SPAN 5076 - Spanish in Colorado
- SPAN 5080 - Spanish in the United States
- SPAN 5521 - Mexican Literature I: pre-Columbian and Colonial
- SPAN 5522 - Mexican Literature II: 19th to 21st Centuries

***Complete a project or thesis on an approved ethnic studies related topic.***

### **International Studies Track**

Through humanistic and social science methodologies and hands-on experiences both in Denver and abroad, students learn to identify patterns and trends in the multifaceted discipline of international studies.

*In addition to the MSS Core requirements, students must:*

***Complete the methodology course listed below or one approved by the MSS program advisor:***

- PSCI 5216 - Seminar: International Relations

***Complete a minimum of 15 credit hours of approved international studies related elective coursework from the list below, substitutions may be approved by the student's advisor :***

- ANTH 5350 - Anthropology of Globalization
- COMM 5270 - Intercultural Communication
- COMM 5720 - Dynamics of Global Communication
- HIST 5032 - Globalization in World History Since 1945
- HIST 5220 - U.S. Foreign Policy Since 1912
- HIST 5412 - Mexico and the United States: People and Politics on the Border
- HUMN 5770 - Imperialism, Post-Colonial Theory & Visual Discourse
- PHIL 5220 - Aesthetics and the Philosophy of Art
- PSCI 5236 - Seminar: American Foreign Policy
- PSCI 5245 - Gender, Globalization and Development
- PSCI 5276 - Conflicts and Rights in International Law
- PSCI 5286 - International Relations: War or Peace?
- PSCI 5326 - Advanced International Political Economy: Globalization
- PSCI 5545 - Immigration Politics
- PSCI 5555 - International Women's Resistance
- SOCY 5460 - Hate Groups and Group Violence
- SOCY 5610 - Sociology of Religion

***Complete a project or thesis on an approved international studies related topic.***

### **Social Justice Track**

The Social Justice track expands students' recognition of the many ways that they are already engaged as citizens and highlights their power to effect change through theoretical and moral education, critical thinking, and community engagement.

*In addition to the MSS Core requirements, students must:*

***Complete a minimum of 12 credit hours of approved social justice related elective coursework from the list below, substitutions may be approved by the student's advisor:***

- BUSN 6540 - Legal and Ethical Environment of Business
- COMM 5040 - Communication, Prisons, and Social Justice
- ENGL 5190 - Advanced Topics in Writing & Digital Studies (depending on topic)
- HIST 5455 - African Struggle for Independence
- HIST 5412 - Mexico and the United States: People and Politics on the Border
- HIST 5415 - Social Revolutions in Latin America
- HIST 5308 - Crime, Policing, and Justice in American History
- HIST 5225 - Urban America: Colonial Times to the Present
- HIST 5032 - Globalization in World History Since 1945
- HUMN 5650 - Reflections on Modernity
- HUMN 5720 - Sexuality, Gender and Their Visual Representation
- PSCI 5025 - Local Governance and Globalization
- PSCI 5206 - Social Movements, Democracy and Global Politics

- PSCI 5225 - Democracy and Democratization
- PSCI 5245 - Gender, Globalization and Development
- PSCI 5274 - Conflict Resolution and Public Consent Building
- PSCI 5276 - Conflicts and Rights in International Law
- PSCI 5286 - International Relations: War or Peace?
- PSCI 5414 - Non-Profits and Social Change
- PSCI 5545 - Immigration Politics
- PSCI 5555 - International Women's Resistance
- PSCI 5837 - Contemporary Issues in Civil Liberties
- SOCY 5440 - Poverty and Social Inequality
- SOCY 5460 - Hate Groups and Group Violence
- SSCI 6010 - Methods and Theories of Feminism and Gender Studies
- WGST 5303 - Sex and Gender in Modern Britain
- WGST 5307 - History of Sexuality
- WGST 5345 - Gender, Science and Medicine: 1600 to the Present

***Complete a project or thesis on an approved social justice related topic.***

It is **HIGHLY RECOMMENDED** that students in this track take at least one quantitative and/or one qualitative research methods course as part of their plan of study. There are quantitative and qualitative methods courses offered in Anthropology, Environmental Science, Political Science, Sociology, and Research, Evaluation, and Statistical Methodology (RESM), which can be approved by the student's MHMSS faculty.

### **Society and the Environment Track**

Society and the Environment is an interdisciplinary track challenges students to apply knowledge from the social and biological sciences to environmental problems across a broad spectrum of institutional sectors and geographic locations.

*In addition to the MSS Core requirements, students must:*

***Complete all required methods courses from the list below:***

- ANTH 5053 - Quantitative Methods in Anthropology
- ANTH 6063 - Qualitative Research Design and Methods

***Complete one technical course from the list below:***

- ANTH 5450 - Development and Conservation: Contemporary Issues
- ANTH 5460 - Development and Conservation: Theory and Practice
- ENVS 6200 - Risk Assessment
- GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing
- GEOG 5080 - Introduction to GIS
- GEOG 5235 - GIS Applications in the Health Sciences



**Complete a minimum of 12 credit hours of approved society and environment related elective coursework from the list below, substitutions may be approved by the student's advisor :**

- COMM 5282 - Environmental Communication
- GEOG 5090 - Environmental Modeling with Geographic Information Systems
- GEOG 5230 - Hazard Mitigation and Vulnerability Assessment
- GEOG 5265 - Sustainability in Resources Management
- GEOG 5335 - Contemporary Environmental Issues
- GEOG 5350 - Environment and Society in the American Past
- GEOG 5420 - The Politics of Nature
- GEOG 5440 - Science, Policy and the Environment
- GEOG 5680 - Urban Sustainability: Perspectives and Practice
- GEOG 5710 - Disasters, Climate Change, and Health
- PSCI 5135 - Seminar: Political Economy of Latin America
- PSCI 5145 - Indigenous Politics
- PSCI 5217 - Human Rights in Theory and Practice
- PSCI 5236 - Seminar: American Foreign Policy
- PSCI 5276 - Conflicts and Rights in International Law
- PSCI 5354 - Seminar: Environmental Politics and Policy
- PSCI 5555 - International Women's Resistance
- ENVS 5010 - Landscape Biogeochemistry
- ENVS 5020 - Earth Environments and Human Impacts
- ENVS 5280 - Environmental Hydrology

**Complete a project or thesis on an approved society and environment related topic.**

## **Women's and Gender Studies Track**

Women's and Gender Studies are based in feminist theory, queer theory, post-colonial and ethnic studies, and a variety of social sciences and cultural studies.

*In addition to the MSS Core requirements, students must:*

**Complete at least one WGST theory course from the list below:**

- SSCI/WGST/ HUMN 6010 - Methods and Theories of Feminism and Gender
- PHIL/ WGST 5500 - Feminist Philosophy
- HIST/WGST/ ENGL 5306 - Survey of Feminist Thought

**Complete a minimum of 12 credit hours of approved women's and gender studies related elective coursework from the list below, substitutions may be approved by the student's advisor:**

- ENGL 5000 - Studies of Major Authors (when the author is a female)
- ETST/ PSCI 4827 - Women and the Law
- ENGL/WGST/ HIST 5306 - Survey of Feminist Thought
- SSCI/WGST/ HUMN 5720 - Sexuality, Gender and Their Visual Representation
- HUMN/ SSCI 5770 - Imperialism, Post-Colonial Theory, Visual Discourse
- PSCI 4215 - Women's Rights, Human Rights: Global Perspectives
- PSCI 5245 - Gender, Globalization and Development
- PSCI 5555 - International Women's Resistance
- PSCI 4564 - Gender and Politics
- CRJU 5930 - Interpersonal Violence Law and Public Policy
- CRJU 5910 - Nature and Scope of Interpersonal Violence
- WGST/ PHIL 5500 - Feminist Philosophy
- PHIL 5308 - Contemporary Feminist Thought
- SOCY 5550 - Seminar: Sociology of the Family
- WGST 5510 - Whores and Saints: Medieval Women
- WGST 5511 - French Women Writers
- WGST 5230 - Women in the West
- WGST 5248 - Gender, Globalization and Development
- WGST 5303 - Sex and Gender in Modern Britain
- WGST 5307 - History of Sexuality
- WGST 5345 - Gender, Science and Medicine: 1600 to the Present
- WGST 5420 - Goddess Traditions

***Complete a project or thesis on an approved women's and gender studies related topic.***

# SOCIOLOGY

**Chair:** Teresa M. Cooney

**Program Assistant:** Rachel M. Gallegos

**Office:** Lawrence Street Center, Suite 420

**Telephone:** 303-315-2148

**Fax:** 303-315-2149

**Website:** [clas.ucdenver.edu/sociology/](http://clas.ucdenver.edu/sociology/)

## Faculty

**Professors:**

Teresa M. Cooney, PhD, The Pennsylvania State University

Jennifer A. Reich, PhD, University of California, Davis

**Associate Professors:**

Candan Duran-Aydintug, PhD, Washington State University

Keith Guzik, PhD, University of Illinois at Urbana-Champaign

**Assistant Professors:**

Brenden Beck, PhD, City University of New York - Graduate Center

Edelina Burciaga, PhD, University of California-Irvine

Adam M. Lippert, PhD, The Pennsylvania State University

Esther Sullivan, PhD, University of Texas at Austin

**Assistant Professor, Clinical Teaching Track:**

Maren T. Scull, PhD, Indiana University

**Senior Instructor:**

Kari Alexander, PhD, University of Colorado Boulder

Jenny Vermilya, PhD, University of Colorado Boulder

**Instructor:**

Carlos Reali, MA, University of Colorado Denver

**Graduate**

The MA Program in Sociology at CU Denver provides a coherent, progressive, educational experience that prepares students for either immediate entry to a master's level career or continued study in a PhD program. The program requires completion of 33 total credit hours, 27 which are obtained through coursework and 6 that comprise the student's comprehensive paper. The MA Program emphasizes training in research methods and offers concentrations in Crime, Law and Deviance; Health and Society; and Family, Social Services and Community.

**Admission Requirements**

Application to the MA program is open to all students holding a BA, BS or higher degree in any field. Students without prior training in sociology, but with otherwise exemplary records, may be admitted but may be required to make up undergraduate deficiencies without graduate credit in the areas of theory, methods and statistics.

### **Recommended Academic Standards**

- A combined GPA of at least 3.3 for all courses taken at the undergraduate or graduate level prior to admission
- A combined GPA of at least 3.5 for all **sociology** courses taken at the undergraduate or graduate level prior to admission

### **Application Materials**

- Complete application form
- Three letters of recommendation (at least two must be from academic/professional sources)
- One copy of official transcripts sent directly to the Department of Sociology from all schools where BA credit hours were taken
- A statement of purpose and goals of graduate study
- Writing sample
- GRE score may be optionally submitted to aid application file
- International Students: You must complete an International Student Application. Minimum TOEFL score of 525 required.
- Out-of-state students from 13 Western states qualify for in-state tuition as part of the WRGP Program.

### **Application Deadlines**

Applications are accepted for **fall** admission only. All application materials are due on February 15th.

Click here to learn about the **requirements for the MA in Sociology**.

### **Programs**

Dual Degree

# 4+1 SOCIOLOGY BA TO MA

### **Introduction**

The Combined BA/MA (4+1) program in Sociology provides a coherent, progressive educational experience that prepares students for either immediate entry to a master's level career or continued study in a PhD program. The BA/MA application process is competitive, as the program is designed for highly-qualified students who are capable of an expedited program. Students choose from two options for their Comprehensive Paper that completes the master's degree: either a 6-credit thesis, or a 3-credit applied experience plus a 3-credit paper. The program also offers 3 concentration areas (Crime, Law & Deviance; Health & Society; Family, Social Services & Community) for students seeking specialization in high-demand career areas.

## **Program Delivery**

- This is an on-campus program.

## **Declaring This Major**

- Consult your advisor about declaring this major

## **General Requirements**

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements
- CU Denver Core Curriculum
- College of Liberal Arts & Sciences Graduation Requirements
- [Click here for information about Academic Policies](#)

## **Program Requirements**

### **Tier 1 Knowledge**

Take **all** of the following required undergraduate courses:

- SOCY 1001 - Understanding the Social World
- SOCY 2001 - Inequalities in Social World
- SOCY 3115 - Quantitative Methods & Analysis
- SOCY 3119 - Qualitative Methods
- SOCY 3140 - Sociological Theory

Take **all** of the following required graduate courses:

SOCY 5000 must be the first graduate course taken (may be taken concurrently with other graduate courses); SOCY 5024 must be taken before SOCY 5183 and SOCY 5193. Students must earn a B or better in all graduate core courses.

- SOCY 5000 - Professional Seminar: Sociological Inquiry
- SOCY 5016 - Social Theory
- SOCY 5024 - Seminar: Research Methods I
- SOCY 5183 - Seminar: Quantitative Data Analysis
- SOCY 5193 - Seminar: Qualitative Data Analysis

### **Tier 2 Knowledge Applied to Substantive Areas**

Five elective courses, one of which may be taken at the undergraduate level. Graduate credit requirements are fulfilled only for those courses earning a minimum grade of B-.

### **Tier 3 Comprehensive Paper**

Take one of the following Comprehensive Paper options:

- SOCY 5955 - Master's Thesis or
- SOCY 5939 - Internship or
- SOCY 5840 - Independent Study: SOCY

**and**

- SOCY 5964 - Master's Report

### **Plans of Study**

#### **THESIS OPTION REQUIREMENTS**

Core course requirements 15 Credits

Four substantive area courses 12 Credits

Master's Thesis 6 Credits

- SOCY 5955 - Master's Thesis

BA/MA Thesis Option Total: 53 Credits

#### **APPLIED PROJECT REQUIREMENTS**

Core course requirements 15 Credits

Four substantive area courses 12 Credits

Applied Experience (internship or independent study) 3 Credits

Master's Paper 3 Credits

- SOCY 5939 - Internship
- SOCY 5840 - Independent Study: SOCY
- SOCY 5964 - Master's Report

BA/MA Applied Project Total: 53 Credits

### **Substantive Area Requirements (12 credits for both options)**

Students can take an unlimited number of sociology graduate (5000-level) seminars to fulfill their 15 elective credits requirement, or a combination of the following:

- Independent study: maximum 6 semester hours
- Graduate level courses in other departments: maximum 6 semester hours
- Internship: maximum 3 semester hours

For further information about the Department of Sociology or the MA program, visit the Sociology website.

### **Master of Arts**

# SOCIOLOGY MA

► Graduate School Policies and Procedures apply to this program

## **Program Requirements**

The MA program in Sociology provides a coherent, progressive educational experience that prepares students for either immediate entry to a master's level career or continued study in a PhD program. Students choose from two options for their Comprehensive Paper that completes the master's degree: either a 6-credit thesis, or a 3-credit applied experience plus a 3-credit paper. The program also offers 3 concentration areas (Crime, Law & Deviance; Health & Society; Family, Social Services & Community) for students seeking specialization in high-demand career areas.

## **Required Courses**

### **Tier 1 Knowledge**

This includes 5 courses required for all graduate students. SOCY 5000 must be taken in the first fall semester. SOCY 5024 must be taken before SOCY 5183 and SOCY 5193. Students must earn a B or better in all core courses.

- SOCY 5000 - Professional Seminar: Sociological Inquiry (3 credits)
- SOCY 5016 - Social Theory (3 credits)
- SOCY 5024 - Seminar: Research Methods I (3 credits)
- SOCY 5183 - Seminar: Quantitative Data Analysis (3 credits)
- SOCY 5193 - Seminar: Qualitative Data Analysis (3 credits)

**Tier 1 total: 15 Credits**

## **Tier 2 Knowledge Applied to Substantive Areas**

- 12 elective credits. Credit requirements are fulfilled only for those courses earning a minimum grade of B-.

**Tier 2 total: 12 Credits**

## **Tier 3 Comprehensive Paper**

- SOCY 5955 - Master's Thesis (6 credits)
- OR
- SOCY 5939 - Internship (3 credits)
- OR
- SOCY 5840 - Independent Study: SOCY
- AND
- SOCY 5964 - Master's Report (3 credits)

**Tier 3 total: 6 Credits**

## **Plans of Study**

Students must choose one of the following Comprehensive Paper options:

### **Thesis Option Requirements**

Core course requirements

15 Credits



Four substantive area courses	12 Credits
Master's Thesis	6 Credits

- SOCY 5955 - Master's Thesis

### **Thesis Option Total: 33 Credits**

### **Applied Project Requirements**

Core course requirements	15 Credits
Four substantive area courses	12 Credits
Applied Experience (internship or independent study)	3 Credits
Master's Paper	3 Credits

- SOCY 5939 - Internship
- SOCY 5840 - Independent Study: SOCY
- SOCY 5964 - Master's Report

### **Applied Project Total: 33 Credits**

### **Substantive Area Requirements (12 credits for both options)**

Students can take an unlimited number of sociology graduate (5000-level) seminars to fulfill their 12 elective credits requirement, or a combination of the following:

- Independent study: maximum 6 semester hours
- Graduate level courses in other departments: maximum 6 semester hours
- Internship: maximum 3 semester hours

For further information about the Department of Sociology or the MA program, visit the Sociology website.

# **WOMEN'S AND GENDER STUDIES**

**Director:** Gillian Silverman (English)

**Graduate Advisor:** Margaret Woodhull (Humanities)

**Office:** 1050 9th Street, #102  
**Telephone:** 303-556-4529  
**Fax:** 303-556-2959  
**Website:** [clas.ucdenver.edu/wgst/](http://clas.ucdenver.edu/wgst/)

## **Associated Faculty**

Joanne Addison (English)  
Brenda J. Allen (Communication)  
Elizabeth Allen (Psychology)  
Laura Argys (Economics)  
Pompa Banerjee (English)  
Nicole Beer (English)  
Myra Bookman (Humanities and Social Sciences)  
Michelle Comstock (English)  
Mary Coussons-Read (Psychology)  
Candan Duran-Aydintug (Sociology)  
Paula Espinoza (Ethnic Studies)  
Jana Everett (Political Science)  
Sarah Fields (Communication)  
Sonja Foss (Communication)  
Andrea Haar (Sociology)  
Sarah Hagelin (English)  
Rachel Harding (Ethnic Studies)  
Amy Hasinoff (Communication)  
Pamela Laird (History)  
Marjorie Levine-Clark (History)  
Donna Martinez (Ethnic Studies)  
Myra Rich (History)  
Candice Shelby (Philosophy)  
Sarah Tyson (Philosophy)  
Cate Wiley (English)

Women's and Gender Studies (WGST) is an interdisciplinary program that focuses on the centrality of gender and sexuality to understanding our past and present worlds. Students and faculty probe assumptions about men and women and question structures of inequality as they play out in local and global contexts. Through a study of gender and sexuality, we expand our thinking about other relations of power, such as race, class, ethnicity, nationality and physical ability. WGST fosters connections with the local community and promotes advocacy of human rights and social justice.

## **Graduate Studies**

At the graduate level, students may pursue Women's and Gender Studies as a track in the Master of Social Science degree program. Students learn to think critically about the condition of women and the role of gender in both historical and contemporary

experience. Course work focuses on conceptual models for understanding women and gender, such as feminist, queer, post-colonial and race theories as they operate through culture, language, politics, visual representation and history. For more information, contact Margaret Woodhull.

The WGST program also offers a Graduate Certificate in Women's and Gender Studies for students pursuing master's degrees in departments in the College of Liberal Arts and Sciences as well as non-degree seeking students.

Click [here](#) to learn about the **requirements for the Graduate Certificate in Women's and Gender Studies**.

# WOMEN'S AND GENDER STUDIES GRADUATE CERTIFICATE

►Graduate School Policies and Procedures apply to this program.

The Women's and Gender Studies Graduate Certificate is administered through the Women's and Gender Studies program in the College of Liberal Arts and Sciences at the University of Colorado Denver. It is designed to provide members of the CU Denver population and public with specialized knowledge of the history, politics, literature and social practices related to women's and gender concerns. Acceptance into the certificate program is subject to CU Denver Graduate School Policies and Procedures.

The WGST certificate is available to any qualified graduate student or non-degree seeking graduate-level student at CU Denver. Students begin with a required, graduate-level methodology or foundational course before pursuing a combination of WGST-related course work. Upon completion of the certificate, students will have foundational and theoretical knowledge of the major concerns of women's and gender studies.

All prospective students must complete and submit an application to the program which can be obtained from the graduate advisor. Upon admission to the certificate program, students are eligible for the certificate.

## Program Requirements

1. Students must complete a minimum of 12 credit hours from approved coursework.
2. Students must complete a minimum of 9 credit hours for the certificate at the graduate (5000 or above) level.
3. Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All

graded attempts in required and elective courses are calculated in the certificate GPA.

4. Students must complete all credits for the certificate with CU Denver faculty.

## **Courses**

Note: Some of the following courses may have prerequisites that must be met. Please see course descriptions.

### **Required Course**

Choose one of the following:

- ENGL 5306 - Survey of Feminist Thought
- HIST 5306 - Survey of Feminist Thought
- WGST 5306 - Survey of Feminist Thought
- HUMN 6010 - Methods and Theories of Feminism and Gender
- SSCI 6010 - Methods and Theories of Feminism and Gender Studies
- WGST 6010 - Methods and Theories of Feminism and Gender Studies

**Total: 3 Hours**

### **Elective Courses (choose three)**

These courses must be explicitly women's and/or gender and/or identity-based courses. They can be taken through any CU Denver department or program with the approval of an advisor. Only one 4000-level elective may be counted toward the certificate. All other course work must be 5000-level or above.

The following is a representative listing of WGST-related courses that may be taken toward the certificate; it is not comprehensive. Please note that some of these courses may be taught sporadically. Students should meet with their advisor to plan their course of study.

- ANTH 5200 - Gender in Cross-Cultural Perspective
- COMM 5020 - Feminist Perspectives on Communication
- COMM 5265 - Gender and Communication
- CRJU 5553 - Women, Crime, and Justice
- ENGL 4510 - Whores and Saints: Medieval Women
- -OR- ENGL 5510 - Whores and Saints: Medieval Women
- ENGL 5000 - Studies of Major Authors

(depending on author being studied; e.g., Virginia Woolf, George Sand, etc.)

- ENGL 5306 - Survey of Feminist Thought
- HIST 5306 - Survey of Feminist Thought
- -OR- WGST 5306 - Survey of Feminist Thought
- ENGL 5308 - Contemporary Feminist Thought
- -OR- WGST 5308 - Contemporary Feminist Thought
- HIST 5303 - Sex and Gender in Modern Britain
- -OR- WGST 5303 - Sex and Gender in Modern Britain
- HIST 5307 - History of Sexuality
- -OR- WGST 5307 - History of Sexuality
- HIST 5345 - Gender, Science, and Medicine: 1600 to the Present
- -OR- WGST 5345 - Gender, Science and Medicine: 1600 to the Present
- HUMN 5720 - Sexuality, Gender and Their Visual Representation
- -OR- SSCI 5720 - Sexuality, Gender and Their Visual Representation
- PSCI 5245 - Gender, Globalization and Development
- -OR- WGST 5248 - Gender, Globalization and Development
- PSCI 5555 - International Women's Resistance
- -OR- WGST 5555 - International Women's Resistance
- PUAD 5910 - Nature and Scope of Interpersonal Violence
- PUAD 5920 - The Psychology of Interpersonal Violence
- PUAD 5930 - Interpersonal Violence Law and Policy
- SOCY 5550 - Seminar: Sociology of the Family
- SSCI 6010 - Methods and Theories of Feminism and Gender Studies
- -OR- WGST 6010 - Methods and Theories of Feminism and Gender Studies

**Total: 9 Hours**

For more information about this certificate program, contact the Women's and Gender Studies Director, Gillian Silverman, 303-556-4529.

# SCHOOL OF PUBLIC AFFAIRS

## CU Denver School of Public Affairs

**Dean:** Paul Teske

**Associate Dean for Faculty Affairs:** Tanya Heikkila

**Associate Dean for Student Affairs:** Kelly Hupfeld

**Assistant Dean of Administration and Finance:** Kathy Kilpatrick

*Lead. Solve. Change.*

### About the School of Public Affairs

The nationally-ranked School of Public Affairs at the University of Colorado Denver prepares leaders for government, nonprofit and criminal justice professions. Driven by a

public service mission, our students are committed to solving pressing public problems and improving their communities for the better. School of Public Affairs graduates work as legislators, policy analysts, nonprofit leaders, law enforcement professionals, local government managers, community advocates, university faculty and administrators, and in many other fields and professions, linked by the common goal of contributing to the greater good.

The School of Public Affairs offers degree programs with optional concentrations, as well as minors and undergraduate and graduate certificate programs. All of our programs are committed to developing the rigorous and ethical thinking necessary for public service professionals. Courses integrate theoretical knowledge with the real-world application of important skills, and students frequently have the opportunity to work on behalf of government agencies and nonprofit organizations. Programs are offered in a variety of formats to accommodate both full-time students and working professionals, all taught by the same highly-regarded faculty. The size of the school means that all students can receive individualized advising and attention, and students and alumni benefit from in-house career and alumni services.

## Contact Us

**General Inquiries:** 303-315-2228

**E-mail:** [spa@ucdenver.edu](mailto:spa@ucdenver.edu)

**Website:** [publicaffairs.ucdenver.edu](http://publicaffairs.ucdenver.edu)

### Visit us at:

**University of Colorado Denver**

**School of Public Affairs**

Lawrence Street. Center  
1380 Lawrence Street, Suite 500  
Denver, CO 80204

### Mailing Address:

University of Colorado Denver  
School of Public Affairs  
Campus Box 142  
P.O. Box 173364  
Denver, CO 80217-3364

## Prospective Students

Rebecca Gianarkis, Recruiting and Admission Coordinator  
303-315-2227  
[spa.admissions@ucdenver.edu](mailto:spa.admissions@ucdenver.edu)

## Academic Advisors

### Graduate Students Last Name A-L:

Dawn Savage, Advisor and Academic Services Manager  
303-315-2743  
[dawn.savage@ucdenver.edu](mailto:dawn.savage@ucdenver.edu)

### Graduate Students Last Name M-Z:

Antoinette Sandoval, Student Services Coordinator  
303-315-2487  
antoinette.sandoval@ucdenver.edu

**International Graduate Students Last Name A-Z:**

Scott Steinbrecher, Coordinator of International Student Programs  
303-315-2755  
scott.steinbrecher@ucdenver.edu

## **Application Deadlines**

Applications for admission are accepted for the fall, spring and summer terms for most programs. For the latest application deadlines, visit the School of Public Affairs' admission web page.

## **Complete Course List**

View the complete course list for the School of Public Affairs.

## **Faculty**

To learn more about our renowned faculty, please view their bios on the School of Public Affairs website.

## **Academic Policies**

To view the Academic policies which apply to all students at CU Denver, please visit the Office of the Registrar website as well as the Academic Policies and University Policies sections of the catalog.

## **Degree Programs**

### **Programs**

#### **Bachelor of Arts/Master of Criminal Justice**

- Criminal Justice, BA/MCJ

#### **Bachelor of Arts/Master of Public Administration**

- CLAS, BA/MPA

- Public Service/Public Administration, BA/MPA

### **Certificate**

- Crime Analysis, Graduate Certificate
- Disasters, Hazards, and Emergency Management (DHEM), Graduate Certificate
- Education Policy, Graduate Certificate
- Emergency Management and Homeland Security (EMHS), Graduate Certificate
- Environmental Policy And Management (EPM), Graduate Certificate
- Gender-Based Violence (GBV) Graduate Certificate
- Interpersonal Violence and Health Care, Graduate Certificate
- Local Government, Graduate Certificate
- Nonprofit Management, Graduate Certificate
- Public Policy Analysis, Graduate Certificate

### **Doctor of Philosophy**

- Public Affairs, PhD

### **Master of Criminal Justice**

- Criminal Justice, MCJ

### **Master of Public Administration**

- Public Administration, MPA

### **Master of Public Administration/Dual Degree**

- Public Administration/Applied Geography and Geospatial Sciences, MPA/MA
- Public Administration/Criminal Justice, MPA/MCJ
- Public Administration/Economics, MPA/MA
- Public Administration/Juris Doctorate, MPA/JD



- Public Administration/Public Health, MPA/MPH
- Public Administration/Urban and Regional Planning, MPA/MURP

# HEALTH PROFESSIONS

Unlike most chapters in this catalog that focus on all programs for a particular school, this chapter provides information about programs within the schools and colleges that prepare students for a career in the health professions. Three schools on the Denver Campus offer health-related graduate programs. Denver Campus students may choose to stay and complete a master's or PhD degree on this campus or apply to programs on the Anschutz Medical Campus. The new state-of-the-art clinical and research facilities on the Anschutz Medical Campus offer students unparalleled training in the health professions. Admission to these programs is very selective, and admission to the Denver Campus does not assure admission to Anschutz Medical Campus programs. All programs on the Anschutz Medical Campus require incoming students to have either a bachelor's degree or a minimum of 60 semester hours of undergraduate work completed before applying.

## Programs on the Anschutz Medical Campus

Information about Anschutz Medical Campus programs are in this chapter is for reference only. Contact individual schools and program directors for details.

### School of Dental Medicine

**Contact:** Dental Admissions, Student Life and Inclusion  
**Telephone:** 303-724-7122  
**Website:** [www.ucdenver.edu/dentalmedicine](http://www.ucdenver.edu/dentalmedicine)

**Degree Programs:** Doctorate of Dental Surgery, International Student Program, Orthodontics, Periodontics, General Practice Residency programs

The University of Colorado School of Dental Medicine trains over 400 students annually. The four-year Doctor of Dental Surgery (DDS) program enrolls 80 new dental students each year. In addition to classroom curriculum and on-campus clinic requirements, DDS students provide dental care to underserved populations throughout the state of Colorado. Consistent with our mission to increase access to education and care, the school's International Student Program, begun in 2005, offers qualified graduates of foreign dental programs the opportunity to earn a Doctor of Dental Surgery degree. The school also offers post-doctoral orthodontics, periodontics, and general practice residency programs. Additionally, the school pioneers research in oral cancer, salivary gland disease, neurobiology and pain control.

## **School of Medicine**

**Contact:** Office of Admissions

**Telephone:** 303-724-8025

**Website:** <http://medschool.ucdenver.edu>

**Degree Program:** Doctor of medicine

The University of Colorado School of Medicine is nationally and internationally respected for its education, research, patient care and community service programs. Faculty members teach and care for patients at the University of Colorado Hospital, Children's Hospital Colorado, Denver Health, National Jewish Health and the Denver V.A. Medical Center, working side by side with nearly 1,000 graduate doctors training at the university. In addition to providing exceptional education and patient care, the medical school attracts gifted faculty and students. The school's physicians and research scientists have pioneered medical breakthroughs that have become national and world models.

## **Child Health Associate/Physician Assistant**

**Contact:** Office of Admissions

**Telephone:** 303-724-7963

**E-mail:** [chapa-info@ucdenver.edu](mailto:chapa-info@ucdenver.edu)

**Website:** [www.ucdenver.edu/academics/colleges/medicalschool/education/degree\\_programs/PAPProgram/Pages/Home.aspx](http://www.ucdenver.edu/academics/colleges/medicalschool/education/degree_programs/PAPProgram/Pages/Home.aspx)

**Degree Program:** Master of Physician Assistant Studies (MPAS)

Ranked among top programs in the nation, the Child Health Associate/Physician Assistant Program offers a three-year, post-baccalaureate professional program awarding a master's in Physician Assistant Studies. The program has been a national leader in innovative curriculum development in the areas of behavioral health, evidence-based practice, family-centered care, oral health and interprofessional practice. Graduates excel in patient care across the life span, receiving extensive didactic and clinical training in primary care adult medicine as well as the care of infants, children and adolescents. They are employed in a variety of settings including managed care organizations, community health centers, physician's offices, public health agencies, hospitals and emergency departments as well as across rural, suburban and inner city health care delivery systems.

## **Physical Therapy**

**Contact:** Physical Therapy Program

**Telephone:** 303-724-9144

**E-Mail:** [PT.Admissions@ucdenver.edu](mailto:PT.Admissions@ucdenver.edu)

**Website:** [www.cuphysicaltherapy.org](http://www.cuphysicaltherapy.org)

**Degree Program:** Doctor of Physical Therapy (DPT)

The University of Colorado Physical Therapy Program offers a post-baccalaureate professional education program of didactic learning and extensive clinical experiences that culminates in a Doctor of Physical Therapy degree (DPT).

Eight consecutive semesters of coursework include classroom, laboratory and clinical education. In year three, students participate in a full-time, 16-week clinical experience as they enter the initial phase of the year-long internship. Graduates are prepared to excel in the physical therapy profession and adapt to the ever-evolving health care environment. As part of the School of Medicine, our entry-level program has been continuously accredited for more than 65 years. Foundational elements of our curriculum include: patient-centered care; clinical reasoning and evidence-based practice; movement for participation; teamwork and collaboration; and, quality improvement and safety.

## **Graduate Medical Education (Residency and Fellowship Programs)**

**Telephone:** 303-724-6031

**Website:** [www.ucdenver.edu/ACADEMICS/COLLEGES/MEDICALSCHOOL/EDUCATION/GRADUATEMEDICALEducation/Pages/graduatemedicaleducation.aspx](http://www.ucdenver.edu/ACADEMICS/COLLEGES/MEDICALSCHOOL/EDUCATION/GRADUATEMEDICALEducation/Pages/graduatemedicaleducation.aspx)

The University of Colorado School of Medicine and affiliated hospitals provide graduate medical education (training of residents and fellows) in more than 60 specialties and subspecialties.

## **Continuing Medical Education**

**Telephone:** 303-724-3552

**Website:** [ucdenver.edu/academics/colleges/medicalschoo/education/continuingmedical/education](http://ucdenver.edu/academics/colleges/medicalschoo/education/continuingmedical/education)

The School of Medicine provides continuing education opportunities for physicians and other health care professionals worldwide. The mission is to enhance the knowledge, skills and performance of physicians and other health care professionals and, in the process, to improve the health care of the populations they serve.

## **College of Nursing**

**Contact:** Office of Student Affairs and Diversity

**Telephone:** 303-724-1812

**Website:** [www.nursing.ucdenver.edu](http://www.nursing.ucdenver.edu)

**Degree Programs:** BS in nursing, MS in nursing, doctor of nursing practice (DNP), dual doctor of nursing practice/master's in public health (DNP/MPH), PhD in nursing

Founded in 1898, the CU College of Nursing has a history of innovation that continues today. The nurse practitioner movement, school nurse program, and caring science theory, all began at CU. The innovation continues today with one of the nation's first interdisciplinary DNP/MPH programs with the Colorado School of Public Health and two

new acute care nurse practitioner post-master's certificate programs beginning in 2014. US News and World Report continue to rank the College of Nursing among the best in the nation, and in 2014, the college's online graduate programs in nursing leadership and informatics were ranked within the top 10 in the U.S.

## **Skaggs School of Pharmacy and Pharmaceutical Sciences**

**Contact:** Office of Student Services

**Director:** Beverly Brunson

**PharmD Telephone:** 303-724-2882

**PhD Telephone:** 303-724-7263

**Fax:** 303-724-7330

**Website:** [www.ucdenver.edu/pharmacy](http://www.ucdenver.edu/pharmacy)

**Degree Programs:** Doctor of pharmacy (PharmD), PhD in toxicology, PhD in pharmaceutical sciences

As drug products become more potent, more complex and more numerous, the need for pharmacists to assume a more active role in patient and medication safety has increased remarkably. The University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences is one of the nation's top-ranked pharmacy schools and is committed to pharmaceutical education, research and patient care. The school's more than 900 professional and graduate students learn about the chemical and physical properties of medicinal agents, the biology of disease and the actions of drugs on the human body, while pursuing either a doctor of pharmacy or PhD degree. The school also provides continuing education programs to pharmacists and other health practitioners throughout the state.

## **Colorado School of Public Health**

**Contact:** Colorado School of Public Health

**Telephone:** 303-724-4613

**Website:** <http://publichealth.ucdenver.edu>

**Degree Programs:** Master of Public Health (MPH) professional degree; Doctor of Public Health (DrPH) professional degree; Master of Science (MS) in Biostatistics, Epidemiology or Health Services Research; Doctor of Philosophy (PhD) in Biostatistics, Epidemiology, or Health Services Research; Certificate in Global Public Health or Public Health Sciences.

**Additional and Specialty Programs:** Joint Degrees (DVM/MPH, DNP/MPH, MD/MPH, MPA/MPH, or MURP/MPH); Residency Programs in Occupational & Environmental Medicine or Preventive Medicine.

The CEPH accredited Colorado School of Public Health is the first and only school of public health in the Rocky Mountain region. Collaboratively formed by the University of Colorado, Colorado State University and the University of Northern Colorado, the school

supports students, practitioners and communities, with access to educational programs, innovative research and community services.

The school offers professional, graduate, residency and certificate programs. Each program provides the training that students need to succeed in general and specialized public health careers. Programs of study focus on a variety of professional interests including applied biostatistics; animals, people and the environment; community and behavioral health; community health education; environmental and occupational health; epidemiology; global health and health disparities; global health plus; health communication; health services research; health systems, management and policy; occupational medicine; physical activity and healthy lifestyles; preventive medicine; and public health nutrition. Students entering the public health programs have access to the collective resources and expertise offered by the collaborating universities and multiple community and government partnerships.

## Programs

### Graduate Degree Programs

## Accounting MS

**Program Director:** Mary Malina and Katherine Gunny

**Telephone:** 303-315-8464/303-315-8431

**E-mail:** [Mary.Malina@ucdenver.edu](mailto:Mary.Malina@ucdenver.edu) or [Katherine.Gunny@ucdenver.edu](mailto:Katherine.Gunny@ucdenver.edu)

Whether you are considering CPA licensure or just looking to accelerate your accounting career, a master of science in accounting will help you achieve your goals. The coursework gives students the technical accounting competencies and critical thinking skills necessary to support a successful career in all accounting areas including public or private accounting, nonprofit, government, or tax.

We offer a 4+1 program that allows our current undergraduate accounting students to pursue the master of science degree, if they achieve a cumulative GPA of 3.00 or higher in the Intermediate series (ACCT 3220, 3230, and 3320), without taking the GMAT test. Students are also allowed to replace two undergraduate required accounting courses with two graduate accounting courses. Interested students, please contact the Business School advising team.

The MS accounting degree consists of 30 required hours + 12 hours of prerequisites that may be waived based on prior coursework:

### Accounting Prerequisites: (12 hours)

The MS in accounting requires completion of the following accounting prerequisites.

Required Prerequisite Courses (advisor will evaluate transcript for possible waivers, grades must be a C or better to be considered for possible waiver):

- ACCT 6031 - Intermediate Financial Accounting I  
(Equivalent undergraduate course: ACCT 3220: Intermediate Financial Accounting I)
- ACCT 6032 - Intermediate Financial Accounting II  
(Equivalent undergraduate course: ACCT 3230 Intermediate Financial Accounting II)
- ACCT 6070 - Intermediate Cost Accounting  
(Equivalent undergraduate course: ACCT 3320 Intermediate Cost Accounting)
- ACCT 6140 - Fundamentals of Federal Income Tax  
(Equivalent undergraduate course: ACCT 4410 Fundamentals of Federal Income Tax)

## **Accounting Core: (24 hours)**

Students may not receive graduate credit for undergraduate coursework and may not retake any course successfully completed at the undergraduate level with a grade of "C" or better. An advisor will evaluate prior coursework to determine possible substitutions.

- ACCT 6020 - Auditing Theory
- ACCT 6024 - Advanced Financial Accounting
- ACCT 6054 - Accounting Information Systems
- ACCT 6150 - Taxation of Business Entities
- ACCT 6250 - Seminar: Financial Accounting
- ACCT 6260 - Seminar: Managerial Accounting
- ACCT 6280 - Accounting Ethics
- ACCT 6620 - Seminar: Auditing and Other Assurance Services

## **Accounting Electives: (6 hours)**

Choose two from the following courses (unless otherwise noted, all courses are 3 credit hours):

- ACCT 6080 - Accounting for Government and Nonprofit Organizations
- ACCT 6285 - Accounting and Finance for Sustainability
- ACCT 6330 - Fraud Auditing
- ACCT 6340 - Financial Statement Analysis
- ACCT 6370 - International Accounting
- ACCT 6520 - Issues in Oil and Gas Accounting
- ACCT 6939 - Internship/Cooperative Education
- ACCT 6400 Taxation of C Corporations and Shareholders

- ACCT 6410 Advanced Tax for Individuals
- ACCT 6450 Tax Research
- ACCT 6480 Partnership Taxation

**Total: 30 hours**

## **Anthropology MA**

► Graduate School Policies and Procedures apply to this program.

### **Plans of Study**

The unique intellectual challenge of anthropology is to integrate knowledge from many disciplines for a global understanding of cultural and biological diversity in the past and the present. Individual courses in cultural anthropology, biological anthropology and archaeology cut across lines of the humanities, social sciences and natural sciences. Because of this integrative perspective on the human condition, and the training provided in objectively assessing cultural patterning and social interaction, an advanced degree in anthropology provides a versatile base for career development.

Students in our terminal Master's program have the benefit of receiving the faculty's full attention. Our program is unique in several respects. First, for students wishing to find employment after their MA, the department offers a mentorship program that pairs them with alumni who have forged careers in students' fields of interest. Second, our program also offers students a range of opportunities for professional development that are unusual in programs that focus on PhD students. For students considering the possibility of doctoral-level work in anthropology, the department has an excellent record in placing students in top-tier graduate programs. Students with residency in 14 states are eligible for in-state tuition, and funding opportunities in the form of Teaching Assistantships and graduate fellowships are available to students on a competitive basis.

The University of Colorado Denver Department of Anthropology provides outstanding graduate education in anthropology, giving students a broad yet thorough grounding in the four subfields of anthropology as well as specialized instruction in one or more of a number of research orientations and/or geographic area concentrations. These orientations encompass the areas of research and application in which department faculty have substantial expertise.

These degree requirements are subject to periodic revision by the academic department, and the College reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their major advisor and CLAS advisor to confirm the best plans of study before finalizing them.

MA students may pursue the thesis or non-thesis option.

- **Thesis Option:** A thesis is characterized by three factors: 1) it is based in a research question or problem; 2) it involves original research; 3) there is a fully developed research proposal. A thesis can also encompass a range of format alternatives to the traditional thesis (e.g. article submitted for publication to a peer-reviewed journal, or a video production, internship or museum exhibit, each generally accompanied by a companion paper developing a theoretical or problem-oriented question). The thesis option requires 30 semester hours, including 4-6 hours of thesis.
- **Non-Thesis Option:** This track is defined by additional course work in lieu of a thesis. The non-thesis option requires 36 semester hours of course work.

## Thesis Option

The thesis is a major requirement for those in the MA in anthropology thesis track. The thesis should demonstrate the student's ability to apply knowledge and skills gained from the anthropology department's curriculum. A desirable goal for an excellent thesis would be a work of sufficient rigor and quality that it could be considered for publication. Original data collection ("fieldwork") is recommended but not required for the thesis. Analysis of secondary data—whether quantitative, qualitative, visual or other formats—is perfectly acceptable as long as the research is informed by a clearly articulated research question and under-girded by a research proposal.

The traditional thesis is a single document that often incorporates a literature review, definition of a problem, discussion of methods to address the problem, the subsequent research activity and results. However, the student may design a thesis with different emphases, in consultation with their advisor. For example, the goal may instead be a more compact paper submitted to a peer-reviewed journal. Other thesis plans may combine some research activity such as a video production, museum exhibit or an internship, with an accompanying paper. Students pursuing the thesis option must develop a topic and research proposal that specifies their plans in the semester after their completion of 18 credit hours.

The thesis must be defended before a committee of three faculty, at least two of whom need to be on the Department of Anthropology faculty (which includes senior instructors and research faculty). The structure of the thesis is largely determined by the Graduate School Policies and Procedures ; i.e., a thesis must conform to the rules.

1. For the thesis, students must prepare a full research proposal which must be approved by their thesis chair before beginning their research. This proposal must be completed by the semester after the student has completed 18 credit hours. Sections of the proposal should include, at a minimum:
  - a. Introduction and statement of the problem: Should include a one sentence statement of the problem on the first page, and a discussion of its significance (i.e., why is it important that this topic be researched).



- b. Literature review covering theoretical and topical material.
- c. Research design and methods including a data analysis plan.

*Note:* Wenner-Gren and National Science Foundation both provide good models and templates for the research proposal. Those in the medical anthropology track might want to consider following the NIH model, depending the nature of their research questions and career goals.

- 2. All students proposing to work with humans or data on modern humans must apply for and receive approval from the Human Subjects Research Committee before they begin their research. Note: most of the material for the application will be drawn from the research proposal.
- 3. The draft thesis must be reviewed and approved as "defensible" by the student's thesis committee faculty chair before a thesis defense date can be set. Defensible means the chair has reviewed the draft and suggested changes have been made.
  - a. The draft sent to the student's committee must be substantively complete: All references must be in the text and properly formatted in a references cited section; there should be no "track changes" comments in the text; the text should be formatted according to Graduate School requirements.
  - b. Given the complexity of faculty and student schedules, consultation on a defense date should be done as far in advance as possible.
  - c. There must be a minimum of three weeks between the agreed-upon date for the defense and distribution of the draft thesis defined as defensible by the student's chair. If you would like feedback from your committee members before the defense, you should plan to distribute the thesis at least 4 weeks before the defense date.

*Note:* If you intend to graduate the same semester you defend your thesis, you must schedule, successfully defend, and complete all recommended changes in accordance with CU Denver thesis and dissertation guidelines. This effectively translates to having the thesis completed and "defensible" before the middle of the semester.

## **Non-Thesis Option**

The non-thesis option allows students to pursue their own educational goals through the selection of additional courses that fit their interests. We strongly encourage students who choose this option to consider an internship position arranged around an area of expertise or the development of a skill-set. The internship may be in a governmental agency or non-governmental organization in Colorado, the U.S. or internationally. Successful completion of an

internship will be acknowledged on the transcript of the MA program. The decision to pursue the non-thesis option should be made by the semester following the completion of 18 credit hours.

### **Additional Information**

Students must maintain an overall GPA of 3.0 to remain in good standing and receive a grade of *B-* or better in a course to have it count toward graduation. The Graduate School on the Downtown Campus allows up to five years to complete a master's degree, but students are strongly discouraged from spending more than four years. While it is possible to finish the MA in two years, most of our students work part-time, which limits the time they can dedicate to the program; most finish within three years. Four semesters must be taken in residence at CU Denver. All students are required to pass a written comprehensive examination, taken after core course work has been completed.

Some students may benefit from adding a specific skills-based certificate program onto their graduate program. For example: archeology students may wish to gain expertise in Geographic Information Systems through the GIS certificate offered through the Department of Geography and Environmental Sciences, while medical anthropology students may benefit from the certificate in public health offered through the School of Public Health. Graduate-level courses in certificate programs can often fulfill elective requirements in the anthropology program.

One doctoral program at the CU Denver campus that may be of particular interest to graduates of the anthropology MA program is the PhD in Health and Behavioral Sciences . It is highly interdisciplinary and a natural extension of a master's degree in medical anthropology.

## **Course Requirements**

Your graduate anthropology education begins by taking ANTH 5810, Integrating Anthropology, plus two core courses each from two subdisciplines of Anthropology. After completing this core, you will select from among the specialized elective courses in the research concentrations described in more detail below. You will work closely with an advisor in selecting the range of courses appropriate both to a problem orientation and to your career objectives.

### **Required core courses (18 semester hours)**

#### **Required in fall of first year:**

- ANTH 5810 - Integrating Anthropology

#### **All students must complete or demonstrate competence in the following:**

- ANTH 5053 - Quantitative Methods in Anthropology

**Choose two of the following three sets of core courses (Students are not required to take these courses sequentially)**

### **Archaeology**

- ANTH 6307 - Contemporary Perspectives in Archaeology
- ANTH 6317 - Archaeological Research Design and Analysis

### **Biological**

- ANTH 6503 - Biological Anthropology Core: The Fossil Record
- ANTH 6513 - Biological Anthropology Core: Modern Human Variation

### **Cultural**

- ANTH 6063 - Qualitative Research Design and Methods
- ANTH 6103 - Current Theory in Ethnography

### **Research Concentrations (8-18 semester hours)**

You will round out your program by selecting from the diverse range of courses offered in the department according to your particular interests in anthropology, your career goals and your plans for future graduate study. You may take courses in one or more concentrations. The courses listed are suggestions only; you must work closely with your advisor in constructing your particular program of study.

### **MEDICAL ANTHROPOLOGY**

Our MA program in cultural anthropology offers a unique focus on Medical Anthropology. Medical anthropology is a subdiscipline of anthropology that includes the study of all aspects of health, illness and disease in human communities and populations. It draws on all of the perspectives that distinguish anthropology as a unique discipline: the analysis of human evolution and adaptation; cultural development, expressions, and variability; and historical change and continuity. Medical anthropology takes as its subject a broad range of specific topics, including the study of health care systems, factors that affect the distribution and determinants of disease in populations, maternal and child health, nutrition and food habits, human development, political ecology, health policy, health disparities, community-driven wellness practices, visual storytelling, social media designed to promote health equities, and language and communication in health care contexts.

Faculty members take a variety of theoretical approaches to the topic, but our program is distinguished by its applied and engaged perspectives. A particular strength of our program is its integration of theoretical knowledge with community- and field-based training opportunities and challenges. We prepare students for careers in nonprofit and community groups, non-governmental organizations, advocacy, public health, health care institutions, and health sciences research; our graduates also attend doctoral programs at selective institutions. Courses in the department are complemented by electives in other departments (sociology, biology, psychology, history, geography, political science) and programs on the CU Denver

campus (public affairs, education, health administration) and at the Anschutz Medical Campus (Schools of Medicine, Public Health, Pharmacy and Nursing).

## **Courses**

As part of the MA degree, students may take between 6 and 18 credits of electives in this track, choosing from:

- ANTH 5000 - Special Topics in Anthropology
- ANTH 5014 - Medical Anthropology: Global Health
- ANTH 5040 - Anthropology of Food and Nutrition
- ANTH 5060 - Evolutionary Medicine
- ANTH 5080 - Global Health Practice
- ANTH 5090 - Drug Syndemic
- ANTH 5150 - Human Biocultural Adaptability
- ANTH 5180 - The Nature of Power
- ANTH 5290 - Anthropology and Public Health
- ANTH 5300 - Migrant Health
- ANTH 5350 - Anthropology of Globalization
- ANTH 5450 - Development and Conservation: Contemporary Issues
- ANTH 5460 - Development and Conservation: Theory and Practice
- ANTH 5600 - Medical Anthropology
- ANTH 5800 - Special Topics in Medical Anthropology
- ANTH 5200 - Gender in Cross-Cultural Perspective

Note: Students are encouraged to take elective courses in GIS mapping (geography), ecology (biology/anthropology), public policy, public health, epidemiology and biostatistics as it is relevant to their course of study.

## **ARCHAEOLOGY**

The archaeological studies program concentrates on the study of past human societies using archaeological data collected in field and museum settings. While a quantitative and scientific approach is emphasized, the theoretical perspectives employed draw heavily from political economy and cultural ecology. The department offers a variety of theoretical, methodological and area courses, which may be supplemented by others in the geography and environmental

sciences and history departments. Internships are available in local museums and historic preservation offices in the Denver metropolitan area.

## **Courses**

- ANTH 5320 - Archaeology of Mexico and Central America
- ANTH 5330 - Lithic Analysis
- ANTH 5380 - Archaeology of Hunters-Gatherers
- ANTH 5400 - Archaeology of Power and Inequality
- ANTH 5570 - Landscape Archaeology
- ANTH 5580 - Neanderthals and the Origin of Modern Humans
- ANTH 5910 - Field Experience in Archaeology
- GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing
- GEOG 5080 - Introduction to GIS
- GEOG 5220 - Environmental Impact Assessment
- HIST 5231 - History in Museums
- HIST 5232 - Historic Preservation
- HIST 5234 - Introduction to Public History

## **BIOLOGICAL ANTHROPOLOGY**

The biological anthropology concentration is concerned with modern human biological diversity and the past evolutionary history that has led to such diversity. Students in this concentration develop a firm understanding of the evolutionary processes that lead to physical and behavioral variation in humans and nonhuman primates. The concentration also emphasizes the theoretical and quantitative methods used to explore and explain this variation. Students may take courses in diverse areas including evolutionary biology, genetics, ecology, ethnobiology, epidemiology, nutrition, medical anthropology, paleoanthropology, paleontology and primatology. Because biological anthropology is multidisciplinary in nature, students are encouraged to consider courses offered outside the department.

## **Courses**

- ANTH 5014 - Medical Anthropology: Global Health
- ANTH 5030 - Ethnobiology
- ANTH 5040 - Anthropology of Food and Nutrition
- ANTH 5060 - Evolutionary Medicine
- ANTH 5150 - Human Biocultural Adaptability
- ANTH 5500 - Advanced Issues in Human Evolution
- ANTH 5530 - Anthropological Genetics

- ANTH 5550 - Primate Comparative Anatomy
- ANTH 5560 - Human Ecology
- ANTH 5580 - Neanderthals and the Origin of Modern Humans
- ANTH 5640 - Darwinian Approach to Human Behavior
- BIOL 5074 - Human Reproductive Biology
- BIOL 5134 - Human Genetics
- BIOL 5494 - Population and Evolutionary Genetics
- HBSC 7031 - Human Ecology and Environmental Adaptation
- HBSC 7310 - Environmental Epidemiology

## **DEGREE TOTAL HOURS**

**Thesis Option: 30 Hours (including 4-6 hours of thesis)**

**Non-Thesis Option: 36 Hours**

# **Applied Geography & Geospatial Science MA**

►Graduate School Policies and Procedures apply to this program

**Program Director:** Gregory Simon

**Office:** North Classroom

**Fax:** 303.315-7526

**E-mail:** [gregory.simon@ucdenver.edu](mailto:gregory.simon@ucdenver.edu)

**Web site:** Applied Geography & Geospatial Science MA

## **Introduction**

In the United States and around the world, balancing the preservation of the natural environment with the imperatives of economic development along with concerns for social well-being has led to a growing demand for broadly trained individuals who can identify and understand pressing social and environmental issues, collect and analyze relevant data, and develop and implement innovative solutions. Graduates of the M.A program in Applied Geography and Geospatial Science will have the knowledge, training, and tools to become leaders in this rapidly growing field.

The program's research focus is human-environment interaction, a longstanding hallmark of the discipline of Geography. Within this area of critical geographic inquiry, the program emphasizes geospatial science, a federally recognized STEM subject area that includes geographic

information systems (GIS) as well as computer cartography, remotely sensed image analysis, and spatial statistics. Students apply their geospatial research skills in the context of hands-on, faculty-led research projects that stress professional development through community engagement and interactive service learning.

## Requirements for Admission

Applicants must hold a Bachelor's degree from an accredited institution.

The University of Colorado Denver has a minimum requirement of 3.0 undergraduate grade point average (GPA) for applicants to the Graduate School. The number of applicants admitted to the MA in Applied Geography & Geospatial Science in any year depends, in part, on space availability. The program is competitive, and we generally discourage applicants whose undergraduate GPA is below 3.0. Notification of acceptance or refusal for admission into the program is mailed to the applicant approximately six weeks after the deadline for submission of applications.

### Application Process

We accept applications once per year, **before or on February 1st**, for admission in the following fall. As part of the admission review process, applicants are required to submit: a graduate application, statement of purpose that articulates the goals of pursuing a graduate degree in this program, a writing sample, a minimum of three letters of recommendation (academic references are preferred), and official transcripts from all institutions previously attended. The GRE is **not** required. However, applicants with less than a 3.0 GPA are welcome to submit GRE scores as further evidence of their qualifications.

## Financial Aid

There are three types of financial aid available: teaching assistant student hourly positions; research assistantship positions funded by grants to specific program faculty; and the regular package of financial aid (primarily loans) available through the financial aid office on the Denver campus. Incoming students will be automatically considered for program-distributed assistance at the time of admission to the program. Continuing students will be regularly apprised of available aid and positions. All other aid should be requested through the CU Denver Financial Aid Office, Student Commons Building, 5th floor, Campus Box 125, P.O. Box 173364, Denver, CO 80217-3364. Telephone: 303-315-1850.

## Internships

Students in the Applied Geography & Geospatial Science MA program are strongly encouraged to contact the Experiential Learning Center for internships and paid positions related to geographical sciences. The Experiential Learning Center is located in the Tivoli Student Union,

Suite 260. Telephone: 303-556-2250. Many students have had internships in federal agencies, such as the U.S. Environmental Protection Agency and the U.S. Geological Survey.

## **Degree Requirements**

The program is offered by the faculty of the Department of Geography and Environmental Sciences in the College of Liberal Arts and Sciences. Students undertake 36 credit hours over a two-year period. These 36 hours include required core classes (6-9 credit hours), a required service learning studio (3 credit hours), and required geo-spatial science coursework (12 credit hours). Students can elect to undertake either of two tracks: the first "coursework" track involves a further 15 hours of elective courses, whereas the second "thesis" track involves 9 hours of electives, and preparation of a written thesis (3 credits).

### **Thesis Option**

Take **all** of the following:

- GEOG 5050 - Applied Spatial Statistics
- GEOG 6300 - Foundations Seminar in Human-Environmental Interaction (3 hours)
- GEOG 6750 - Research Design (3 hours)
- GEOG 6800 - Community-Based Research Practicum (3 hours)

Take 12 additional hours of Geospatial Science courses

Take 9 hours of Elective courses (up to 6 hours can be taken outside the Department of Geography & Environmental Sciences, as approved by advisor)

- GEOG 6950 - Master's Thesis (3 hours)

33 hours of coursework and 3 thesis hours

### **Non-thesis Option**

- GEOG 6300 - Foundations Seminar in Human-Environmental Interaction (3 hours)

Take **all** of the following:

- GEOG 5050 - Applied Spatial Statistics
- GEOG 6800 - Community-Based Research Practicum (3 hours)



Take 12 hours of Geospatial Science courses

Take 15 hours of Elective courses (up to 6 hours can be taken outside the Department of Geography & Environmental Sciences, as approved by advisor)

36 hours of coursework

## Notes

1. Many of the electives have prerequisites; students must have met these requirements in order to take the course.
2. Courses applied to either a certificate\* or an MA degree may later be applied toward the other if all pertinent coursework is completed within a five year time period.
3. Students should fill out and submit all relevant department forms for their files. Importantly, all petitions for course substitutions and identification of where courses fit as electives, with the subsequent approval/denial, should be submitted to this file.
4. By the end of the first semester, each student should identify and declare whether or not s/he is pursuing the thesis or non-thesis option. If intending to pursue the thesis option, the student should identify and gain agreement from a content advisor for guiding the thesis, filling out and submitting the appropriate departmental form.
5. Many of the electives have pre-requisites; students must have met these requirements in order to take the course.
6. Students may transfer up to 9 hours of approved graduate-level credit into the program. These courses must be approved by the Graduate Director and they may not replace core courses.
7. Students may count up to 6-credit hours of independent, with a maximum of 3-credit hours per independent study towards elective credit in the major as approved by the Graduate Director. No more than 3 credit hours of independent study may be taken with the same instructor and they may not be taken in the same term.
8. Students may count up to 6-credit hours of internship in total, but 3-credit hours per internship and per entity (sponsorship may be with same professor sponsor)
9. Students may not count 4000-level courses towards electives in the program; this may be petitioned to the Graduate Committee in exceptional cases.
10. Students may take a maximum of 2 online courses, or petition to the GES Graduate Committee beyond two.
11. Students may enroll in thesis preparation and writing hours only after submission of signed committee form, which requires approval of the thesis proposal.
12. Students will not receive a grade for thesis preparation and writing hours until the thesis is successfully defended.

13. Students must follow the graduate school deadlines for submission of paperwork for the graduation application, comprehensive exam, and any other deadlines. Links to these can be found on the GES/MS website.

14. Work submitted for the environmental sciences options must have a grade of *B* (3.0) or better.

\* GES offers Geospatial, Environmental Education, and Urban Agriculture independent graduate certificates. These certificates may be earned without entrance into the MS in environmental sciences program. (See the Geographic Information Science Graduate Certificate , Sustainable Urban Agriculture Graduate Certificate , and Environmental Science Education Graduate Certificate descriptions.)

## Applied Mathematics MS

► Graduate School Policies and Procedures apply to this program.

### Program Requirements

Students must present 30 hours of course work for the MS degree. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. At least 24 of these hours must consist of graduate-level (numbered 5000 or higher) mathematics courses. The remaining 6 hours must be either mathematics courses numbered 5000 or above or approved courses outside the department numbered 4000 or above.

Up to 9 semester hours of prior course work may be transferred in (subject to approval); these must be at the 5000 level or above with a *B-* or better grade. Courses already applied toward another degree (graduate or undergraduate) cannot be used toward the MS degree in applied mathematics. Additionally, the following MATH courses will NOT count toward a graduate degree: MATH 5000-5009, 5010, 5012-5015, 5017, 5198, 5250, and 5830.

A student may devote from 4 to 6 hours (of the 30 required hours) to the writing of a thesis. Following completion of course work, all candidates must make a one-hour oral presentation of a project or a thesis before a committee consisting of three graduate faculty members.

### Course Requirements

The following course requirements must be satisfied by all students in the MS in Applied Mathematics Program:

1. (Analysis Core Requirement) One of: MATH 5070 (Applied Analysis) or MATH 6131 (Real Analysis),
2. (Linear Algebra Core Requirement) MATH 5718 (Applied Linear Algebra), and
3. At least 24 additional semester hours of coursework, subject to the rule about 4000-level courses in disciplines outside of mathematics outlined above

Additionally, a student must either satisfy the course requirements for the MS degree without a concentration area or satisfy the requirements in one of the concentration areas listed below. Unless noted elsewhere, one course cannot be used to fulfill two requirements. Substitutions or changes to the requirements may be made with the written approval of a student's academic advisor and the Graduate Committee.

The following MATH courses will NOT count toward a graduate degree: MATH 5000-5009, 5010, 5012-5015, 5017, 5198, 5250 and 5830.

- MATH 5070 - Applied Analysis
- MATH 5718 - Applied Linear Algebra
- MATH 6131 - Real Analysis

## **MS Degree without a Concentration Area**

Students must complete at least three courses chosen from the following list. Note that MATH 6131 (Real Analysis) can be used to satisfy both the analysis core requirement and may also count as one of the three courses satisfying this requirement.

- Any MATH course at the 6000 level or above
- MATH 5310 - Probability
- MATH 5320 - Introduction to Mathematical Statistics
- MATH 5490 - Network Flows
- MATH 5593 - Linear Programming

Additional course options may be added later at the discretion of the Department of Mathematical and Statistical Sciences, e.g., as new courses are introduced to the graduate program.

## **Applied Statistics Concentration**

**Take all of the following courses:**

- MATH 5310 - Probability
- MATH 5320 - Introduction to Mathematical Statistics
- MATH 5387 - Applied Regression Analysis
- MATH 6330 - Workshop in Statistical Consulting

**And, take one of the following courses:**

- MATH 5394 - Experimental Designs
- MATH 5792 - Probabilistic Modeling
- MATH 6376 - Statistical Computing
- MATH 6380 - Stochastic Processes
- MATH 6384 - Spatial and Functional Data Analysis
- MATH 6388 - Statistical and Machine Learning
- MATH 7384 - Mathematical Probability
- MATH 7393 - Bayesian Statistics
- MATH 6101 - Uncertainty Quantification
- MATH 7386 - Monte Carlo Methods
- MATH 7826 - Topics in Probability and Statistics

Any additional course given prior approval by the student's advisor and the Director of the Program in Statistics.

## **Applied Probability Concentration**

**Take all of the following courses:**

- MATH 5310 - Probability
- MATH 5792 - Probabilistic Modeling
- MATH 6380 - Stochastic Processes

**And, take one of the following courses:**

- MATH 6131 - Real Analysis
- MATH 6101 - Uncertainty Quantification
- MATH 7386 - Monte Carlo Methods

## **Discrete Mathematics Concentration**

**Four of the following courses:**

- MATH 5410 - Modern Cryptology
- MATH 5490 - Network Flows
- MATH 5793 - Discrete Math Modeling
- MATH 6404 - Applied Graph Theory
- MATH 7405 - Advanced Graph Theory
- MATH 7409 - Applied Combinatorics
- MATH 7410 - Combinatorial Structures
- MATH 7413 - Modern Algebra I
- MATH 7419 - Mathematical Coding Theory

- MATH 7421 - Projective Geometry
- MATH 7821 - Topics in Projective Geometry
- MATH 7823 - Topics in Discrete Math

## **Mathematics of Engineering and Science Concentration**

### **Three of the following courses:**

- MATH 5387 - Applied Regression Analysis
- MATH 5779 - Math Clinic
- MATH 5791 - Continuous Modeling
- MATH 5792 - Probabilistic Modeling
- MATH 5793 - Discrete Math Modeling
- MATH 5794 - Optimization Modeling
- MATH 6735 - Continuum Mechanics

### **And, take two of the following courses:**

- MATH 5660 - Numerical Analysis I
- MATH 5661 - Numerical Analysis II
- MATH 5733 - Partial Differential Equations
- MATH 6653 - Introduction to Finite Element Methods
- MATH 7663 - Finite Difference Methods for Partial Differential Equations
- MATH 6101 - Uncertainty Quantification
- MATH 7386 - Monte Carlo Methods
- MATH 7665 - Numerical Linear Algebra

## **Numerical Analysis Concentration**

### **Take all of the following courses:**

- MATH 5660 - Numerical Analysis I
- MATH 5661 - Numerical Analysis II

### **And, take three of the following courses:**

- MATH 5593 - Linear Programming
- MATH 5733 - Partial Differential Equations
- MATH 6595 - Computational Methods in Nonlinear Programming
- MATH 6653 - Introduction to Finite Element Methods
- MATH 6735 - Continuum Mechanics
- MATH 7665 - Numerical Linear Algebra
- MATH 8660 - Mathematical Foundations of Finite Element Methods
- MATH 6101 - Uncertainty Quantification

- MATH 7386 - Monte Carlo Methods

## Operations Research Concentration

### Take all of the following courses:

- MATH 5593 - Linear Programming
  - MATH 5792 - Probabilistic Modeling
- OR**
- MATH 6380 - Stochastic Processes

### And, take two of the following courses:

- MATH 5390 - Game Theory
- MATH 5490 - Network Flows
- MATH 5794 - Optimization Modeling
- MATH 6595 - Computational Methods in Nonlinear Programming
- MATH 7593 - Advanced Linear Programming
- MATH 7594 - Integer Programming
- MATH 7595 - Advanced Nonlinear Programming
- MATH 7825 - Topics in Optimization
- MATH 5779 - Math Clinic

# Architecture MArch

## Faculty

### Professors:

Amir Ameri, PhD, Cornell University  
Julee Herdt, MArch, Southern California Institute of Architecture  
Michael K. Jenson, PhD, University of Edinburgh  
Laurence K. Loftin III, MArch, University of Virginia

Marc Swackhamer, MArch, Rice University  
Ekaterini Vlahos, MArch, University of Colorado Denver

### Associate Professors:

Osman Attmann, PhD, Georgia Institute of Technology  
Robert H. Flanagan, MArch, University of Colorado Denver  
Christopher Koziol, PhD, University of Colorado Denver  
Taisto H. Mäkelä, PhD, Princeton University

### Assistant Professors:

Erik Sommerfeld, MArch, University of Colorado Denver  
Kevin Hirth, MArch, Harvard Graduate School of Design

Matthew Shea, MArch, University of Colorado Denver

**Associate Professor (Clinical Teaching Track):**

Barbara Ambach, MArch, Southern California Institute of Architecture

**Assistant Professors (Clinical Teaching Track):**

Amir Alrubaiy, MArch, University of Colorado Denver

**Senior Instructor:**

Ranko Ruzic, MArch, University of Colorado Denver

**Instructor:**

Jo VandenBurg, MArch, University of Colorado Denver

Additional information about faculty in this department is available on the college's website.

## **Degrees**

The College of Architecture and Planning offers a pre-professional Bachelor of Science in Architecture (BSArch) degree and the professional Master of Architecture (MArch) degree which is fully accredited by the National Architectural Accrediting Board (NAAB).

# **ARCHITECTURE MARCH**

The Master of Architecture is offered to students who have completed a pre-professional architecture degree, as well as to students who have completed an unrelated undergraduate or graduate degree. Students holding a pre-professional degree from another institution will be evaluated individually for advanced standing in the MArch program, commensurate with their previous educational experiences.

Our program prepares students for entry into the architecture profession and licensure. Our mission is to lead in the discovery, communication and application of knowledge in the discipline of architecture by integrating theory and practice. In this collaborative educational model, environmental, economic, social, cultural, aesthetic and ethical concerns are fundamental.

The curriculum responds to and aligns with the evolving nature of professional practice including collaborative work environments, critical thinkers, problem-solving team players, builders and leaders with excellent communication skills. Recognizing that the practice of

architecture is global, we provide students with international perspectives and experiences giving them a competitive edge when they enter the profession.

Students whose undergraduate degree was not a design related degree will take a minimum of three years to complete the Master of Architecture. Students who have an undergraduate design related degree may receive credit for courses previously taken and can typically complete the program in two years depending on advanced standing given. The program provides the skills and bodies of knowledge nationally specified for graduate study in architecture and is fully accredited by the National Architectural Accrediting Board (NAAB).

## **Prerequisites**

Students must complete the prerequisites of college-level trigonometry and physics before enrolling in the MArch program or must complete ARCH 5000 Math and Physics for Architects. This course is offered during the summer on a pass/fail basis and meets the prerequisite requirements. This class does not count toward the number of credits required for the MArch degree.

The architecture skills workshop is highly recommended for students who do not have a background in architectural drawing, model making or digital graphics work. This class is offered each year before the beginning of the fall semester.

Students are expected to have achieved a basic level of computer literacy and should be familiar with PC or Mac operating systems.

## **Program Tracks**

There are two curriculum tracks leading to the MArch degree.

### **Four Studio Track - 60 Semester Hours**

This course of study allows those students with a pre-professional degree to pursue a professional Master of Architecture degree in a minimum of two years, the total duration of the program will vary. The curriculum follows a prescribed sequence of core courses and four design studios. Applicants must hold a Bachelor of Science in Architecture, Bachelor of Art in Architecture or Bachelor of Environmental Design to be considered for this track.

### **Six Studio Track - 105 Semester Hours**

This course of study allows students without a pre-professional degree to pursue a professional Master of Architecture degree in a minimum of three years. The curriculum follows a prescribed course of fundamental core courses and six design studios. Applicants must hold a baccalaureate degree from an accredited university in any field.

All degrees awarded by universities outside the United States will be reviewed on a case-by-case basis and the admissions committee will determine the appropriate track.



# Four Studio Track

## Curriculum Overview

The Four Studio Track curriculum for the Master of Architecture (MArch) program is divided into six major components, totaling a minimum of 60 semester hours in residence at the University of Colorado Denver:

Design Studios and Seminars	27 semester hours
Representational Studies (required elective)	3 semester hours
Historical/Cultural Studies (required elective)	3 semester hours
Technological Studies (required elective)	3 semester hours
Professional Studies	9 semester hours
Open Electives	15 semester hours

A wide array of electives in these areas allows students to tailor their graduate studies to their own interests. Of 15 general elective semester hours, nine must be fulfilled with courses taken in the Architecture Department. Students may choose to take elective courses in the summer session. It is highly suggested that students use the summers to study abroad or participate in a professional internship.

In order for a student to complete the course of study within the 60 semester hours (two years of study) a student must have completed the following courses with a grade of B or better:

- 4 design studios (six credits each)
- 2-3 course sequence covering the history of architecture
- 1 course introduction to the theory of architecture
- 2 course sequence on sustainable environmental control systems
- 2 course sequence on structures addressing statics, material mechanics, structural analysis, and design of simple structural elements and systems
- 2 course sequence on building materials and construction
- 1 course on architectural visualization and representation
- 1 course on Building Information Modeling

Above courses not completed by the time the student enrolls in the program will be added onto the 60 semester hours and will need to be completed at the University of Colorado Denver prior to graduation. An official review of the student's previous course work will be conducted in the spring following admissions and will be sent to the student upon the receipt of the student's intent to attend.

## Course Sequence

This schedule shows the recommended sequence of courses. To modify this schedule, students should consult their CAP academic advisor.

### First Year

#### Fall

- ARCH 5130 - Design Studio III
- ARCH 5430 - Social Context of Design
- Required or Open Elective
- Required or Open Elective

**Total: 15 Hours**

#### Spring

- ARCH 5140 - Design Studio IV
- ARCH 5450 - Sustainable Design Practices
- Required or Open Elective
- Required or Open Elective

**Total: 15 Hours**

### Summer (optional)

### Second Year

#### Fall

- ARCH 6150 - Design Studio V
- ARCH 5410 - Professional Practice
- Required or Open Elective
- Required or Open Elective

**Total: 15 Hours**

#### Spring

- ARCH 6170 - Design Studio VI
- ARCH 6171 - Integration Seminar
- Required or Open Elective
- Required or Open Elective

**Total: 15 Hours**

**Summer (optional)**

**Six Studio Track**

**Curriculum Overview**

The curriculum for the Master of Architecture (MArch) program is divided into six major areas of study, totaling 105 semester hours:

Design Studios and Seminars	39 semester hours
Representational Studies (required elective)	6 semester hours
Historical/Cultural Studies (required elective)	12 semester hours
Technological Studies (required elective)	21 semester hours
Professional Studies	12 semester hours
Open Electives	15 semester hours

A wide array of electives in these areas allows students to tailor their graduate studies to their own interests. Of the 15 general elective semester hours, nine must be fulfilled with courses taken in the Architecture Department. Advanced standing in core course work can be given for prior architectural studies. Students may choose to take elective courses in the summer session. It is highly suggested that students use the summers to study abroad or participate in a professional internship.

**Course Sequence**

This schedule shows the recommended sequence of courses. To modify this schedule, students should consult their CAP academic advisor.

**First Year**

**Fall**

- ARCH 5110 - Design Studio I

- ARCH 5210 - Introduction to Architecture
- ARCH 5350 - Structures I
- ARCH 5510 - Architectural Graphics
- Professional Studies or Elective Requirement

**Total: 18 Hours**

## **Spring**

- ARCH 5120 - Design Studio II
- ARCH 5220 - History and Theory Architecture I
- ARCH 5360 - Structures II
- Professional Studies or Elective Requirement
- Professional Studies or Elective Requirement

**Total: 18 Hours**

## **Second Year**

### **Fall**

- ARCH 5130 - Design Studio III
- ARCH 5230 - History and Theory Architecture II
- ARCH 5310 - Building Construction I
- Professional Studies or Elective Requirement
- Professional Studies or Elective Requirement

**Total: 18 Hours**

### **Spring**

- ARCH 5140 - Design Studio IV
- ARCH 5320 - Building Construction II
- ARCH 5330 - Sustainable Systems I
- Professional Studies or Elective Requirement
- Professional Studies or Elective Requirement

**Total: 18 Hours**

## **Third Year**

## Fall

- ARCH 6150 - Design Studio V
- ARCH 5340 - Sustainable Systems II
- Professional Studies or Elective Requirement
- Professional Studies or Elective Requirement
- Professional Studies or Elective Requirement

**Total: 18 Hours**

## Spring

- ARCH 6170 - Design Studio VI
- ARCH 6171 - Integration Seminar
- Professional Studies or Elective Requirement
- Professional Studies or Elective Requirement

**Total: 15 Hours**

# Bioengineering MS

► Graduate School Policies and Procedures apply to this program.

## Master of Science (MS) Degree Program

The master of science degree is offered to students with an undergraduate degree in the life sciences or engineering. Students complete the degree in 18 months to two years with the choice of a project or thesis, either of which may be completed in academia or industry. Program details are available on the Department of Bioengineering website at [ucdenver.edu/bioengineering](http://ucdenver.edu/bioengineering).

# Biology MS

► Graduate School Rules apply to this program.

**Graduate MS Program Director:** Alan Vajda

**Office:** Science, 4104

**Telephone:** 303-315-7640

**E-mail:** [Alan.Vajda@ucdenver.edu](mailto:Alan.Vajda@ucdenver.edu)

**Website:** <https://clas.ucdenver.edu/integrative-biology/academics/graduate-programs>

## Requirements for Admission

- A BA/BS from an accredited institution awarded within the last 10 years (validation of current content may be required)
- Minimum undergraduate GPA: 3.0
- TOEFL: required for international applicants from countries in which English is not the official language
- 3 letters of recommendation
- Official transcripts from all attended institutions
- Students are required to contact faculty in advance. Prior to application, applicants must have identified and contacted an available Faculty Advisor to ensure the availability of a position and appropriate research interests

### **Prerequisite courses required:**

- One year of general biology (lecture and laboratory)
- One year of any combination of chemistry, physics or mathematics
- One course in applied or biological statistics (through regression and ANOVA)
- Additional prerequisite requirements may be set by individual faculty

**Application deadline is December 1 for both domestic U.S. and international students.** Application to the master's in biology program is through CU Denver Admissions.

## Degree Requirements

Students matriculate into the research-based MS degree program. Under unusual circumstances, students and/or advisors may petition for a student to switch into the coursework-based MS degree program. The research-based MS program requires a minimum of 30 credits, and the coursework-based MS program requires a minimum of 32 credits. No double-counted courses will be applied to the degree. A maximum of 12 hours of graduate level courses may be transferred and counted toward the degree in either program. Both programs additionally require the student to meet minimum academic residency requirements, to form an advisory committee and to deliver and orally defend written work before the advisory committee, which constitutes the final exam for both programs as required by the Graduate School.

### Research-based MS degree program **requires**

1. Completing 30 credits including 3-6 thesis (BIOL 6950)
2. Meeting minimum academic residency requirements
3. Forming and meeting regularly with an advisory committee
4. Writing and defending research proposal
5. Writing and defending research thesis (including a publishable paper)

### Coursework-based MS degree program **requires**

1. Approved petition to transfer into coursework-based program
2. Completing a minimum of 32 credits
3. Meeting minimum academic residency requirements
4. Writing and defending publication-quality review paper (before advisory committee)

## Required Courses:

- BIOL 6705 - Biological Research Workshop (4 credits total-take in 2 different years)
- BIOL 6655 - Seminar (2 credits total-take in 2 different years)
- BIOL 6764 - Biological Data Analysis (4 credits total-take in year 1)
- BIOL 6002 - Biology Skills Sets - Pedagogy (required only for students supported by a Graduate Teaching Assistantship)

### *Additional minimum requirements for research-based MS program*

- BIOL 6950 - Master's Thesis (1-2 credits in first spring/summer to write proposal and 2-4 credits in final semester to write thesis)

### *Additional minimum requirements for the coursework-based MS program*

- BIOL 5840 - Independent Study: BIOL (3 credits: advisor-guided review paper)

# Business Administration -- Health Administration MBA

**Program Director:** Rulon Stacey

**Telephone:** 303-315-8851

**E-mail:** Rulon.Stacey@ucdenver.edu

The graduate program in health administration is consistently ranked as a top program in the United States and attracts students with a variety of backgrounds and experience levels, which further enriches the classroom experience. The HA program is accredited by the Commission on Accreditation of Healthcare Management Education. Full-time faculty with distinguished research records and a select group of practicing managers provide students with the latest thinking on the most important health issues.

## Degree Requirements

The curriculum of the MBA in Health Administration is a synthesis of management concepts and techniques that are applicable to any economic organization and tools that can be specifically applied to health services systems. The program emphasizes skills that strengthen basic analytic

and decision-making processes used by top-level managers in selecting broad strategies and by junior managers in administering sub-units in healthcare organizations.

Students enrolled in the Master of Business Administration in Health Administration must complete a minimum of 45 semester hours of graduate-level course work to receive their degree. The curriculum is based on a series of structured learning sequences. All of the courses are available in the evening to enable working students to pursue the degree on a part-time basis. The specific course requirements are as follows:

### **MBA Core: (27 hours)**

- BUSN 6521 - Leading Individuals and Teams
- BUSN 6530 - Data Analytics for Managers
- BUSN 6541 - Legal and Ethical Environment of Business (Health Section)
- BUSN 6550 - Analyzing and Interpreting Accounting Information
- BUSN 6561 - Marketing Management (Health Section) This course has a new title: Marketing Dynamics in the 21st Century (Health Section).
- BUSN 6621 - Applied Economics for Managers (Health Section)
- BUSN 6630 - Management of Operations
- BUSN 6640 - Financial Management
- BUSN 6711 - Strategic Management (Health Section) \*This course is intended to be taken in your last Spring semester.

### **Health Administration Core: (12 hours)**

- HLTH 6010 - Health Care Systems
- HLTH 6070 - International Health Policy and Management
- HLTH 6770 - Healthcare Quality and Outcomes
- HLTH 6911 - Health Field Studies \*This course is intended to be taken in your last Spring semester. Prereq: HLTH 6010 or consent of instructor, minimum 3.0 cumulative GPA.

### **Health Administration Information Technology Elective: (3 hours)**

Select 1 of the following courses:

- HLTH 6071 - Introduction To Health Information Technology
- HLTH 6072 - Management of Healthcare Information Technology

The 2nd Health Administration Information Technology Elective may be used as Health Administration Elective.



## Health Administration Electives: (3 hours)

Select 1 of the following courses:

- ENTP 6801 - Building Biotechnology
- ENTP 6848 - Leadership in New Ventures
- HLTH 6075 - International Health Travel Study
- HLTH 6740 - Profiles in Health Care

\*HLTH 6071 or HLTH 6072 can be selected if not used as Health Administration Information Technology Elective.

A new Health course, HLTH 6730 - Healthcare Operations Management, was added in Spring of 2020 and is also a possible selection.

- ISMG 6810 - Business Intelligence in Healthcare

## Specialized Tracks within the MBA in Health Administration

Each track carries its own specific course requirements. To provide a variety of perspectives and experiences within a specific area of health administration, each track includes courses that span various departments within the Business School, other schools at CU Denver, and other University of Colorado campuses.

- International Health Management and Policy Track
- Financial Management Track
- Health Information Technology Management Track

## Notes and Restrictions

*Administrative Residency or Fellowship.* An administrative residency or fellowship is optional but recommended for students with limited healthcare experience. The program faculty provide guidance to students applying for residencies or fellowships. Information on the full range of local, regional, and national residencies or fellowships is available from the program director.

*Length of program.* A maximum of five years and one semester is allowed to complete the Health Administration program.

# Business Administration MBA

**Program Director:** Ronald Ramirez

**Telephone:** 303-315-8000

**E-mail:** Ronald.Ramirez@ucdenver.edu

The Master of Business Administration (MBA) program provides a general background in management and administration. This background enables the student to have the breadth and depth of knowledge required for an advanced-level management career. The program is designed to develop the concepts, analytical tools and communication skills required for competent and responsible administration of an enterprise viewed in its entirety, within its social, political and economic environment.

The professional MBA program allows the scheduling of classes with maximum flexibility so students can progress through the program at their own pace, by taking as little as one class per semester or as many as five classes per semester, at times that accommodate work schedules. Students may combine on-campus courses at our Denver campus or take courses at our South Denver location in Parker, Colorado. For students planning to combine courses at both locations, it is important to work with the advising team for planning purposes. The program can be completed in as little as 16 months or as long as five years plus one semester.

Online courses add additional flexibility. Students may complete all degree requirements online, or combine online and campus courses to broaden the choice of electives or to fit a business travel schedule or personal learning style. Choice of online electives is limited.

The MBA program is also available in different configurations: One Year MBA (full time, see relevant section), Health Administration and the Executive MBA (see relevant section). All MBAs have similar curriculum requirements; they differ principally in focus, the flexibility of course scheduling, and the time required to complete the program. The One Year and Executive MBAs are lockstep programs, where students form a cohort and complete all program requirements together. No course transfers, waivers or substitutions are permitted.

## Program Requirements

### Core Requirements: (30 hours)

- BUSN 6520 - Leading Individuals and Teams
- BUSN 6530 - Data Analytics for Managers
- BUSN 6540 - Legal and Ethical Environment of Business
- BUSN 6550 - Analyzing and Interpreting Accounting Information
- BUSN 6560 - Marketing Dynamics in the 21st Century
- BUSN 6610 - Information Systems Strategy
- BUSN 6620 - Applied Economics for Managers
- BUSN 6630 - Management of Operations
- BUSN 6640 - Financial Management
- BUSN 6710 - Strategic Management

*Core Substitution:* Students with extensive and comparable course work in a particular core subject area may petition to substitute a higher-level graduate course on the basis of prior undergraduate or graduate course work taken at a

regionally accredited college or university for the corresponding core class. This does not waive the 48-hour requirement. If a core course is substituted, another graduate level course in the same functional area must be used as a substitute so that the student completes a total of 48 semester hours.

### **International Elective: (3 hours)**

Any course numbered 6000 or higher with INTB prefix or any graduate level business course that is cross-listed with an INTB prefix. May also include the following: ENTP 6826 International Entrepreneurship, MTAX 6431 Inbound International Taxation, or RISK 6209 Cyber Risk Management. Travel studies offered by the Business School will also apply.

### **Free Electives: (12 hours)**

Any course numbered 6800 or higher with BUSN prefix or any course numbered 6000 or higher with prefix of ACCT, BANA, CMDT, ENTP, FNCE, INTB, ISMG, MGMT, MKTG, MTAX, or RISK. Students may also select a MBA Specialization.

### **Total: 45 Hours**

## **MBA Specializations**

Graduate students will have an opportunity to take specialized tracks within the professional MBA program by completing a pre-specified program of elective courses. The following 15 specializations are available:

- Accounting
- Bioinnovation and Entrepreneurship
- Business Analytics
- Business Intelligence
- Business Strategy
- Commodities
- Enterprise Technology Management
- Entrepreneurship
- Finance
- Information Systems
- International Business
  
- Management
- Managing for Sustainability
- Marketing
- Risk Management and Insurance

## Accounting

Students need to complete the required courses for a total of 4 courses for the specialization. Students who have completed equivalent courses to the ones listed below can substitute any ACCT course numbered 6000 or higher for courses in which they have been waived. Please contact an advisor for course waivers.

### **Required courses:**

- ACCT 6031 - Intermediate Financial Accounting I
- ACCT 6032 - Intermediate Financial Accounting II
- ACCT 6070 - Intermediate Cost Accounting
- ACCT 6140 - Fundamentals of Federal Income Tax

## Bio-innovation and Entrepreneurship

The Jake Jobs Center for Entrepreneurship is pleased to offer a specialization in Bio-innovation and Entrepreneurship, which is the first of its kind in the country to be offered by an AACSB accredited graduate business school. Taking advantage of the Colorado's bio-cluster, in collaboration with faculty at Anschutz Medical Campus, this specialization is one-of-a-kind, and is geared to helping bio-entrepreneurs achieve commercial success. Additionally, you have opportunities to participate in a number of Jake Jobs Center programs; including the annual business plan competition, internships in area businesses, speaker programs with local entrepreneurs, and connections to many new Colorado ventures.

### **Select 1 of the following courses:**

- ENTP 6801 - Building Biotechnology
- ENTP 6802 - Regulatory Environment of Life Science Innovation

### **Select 1 of the following courses:**

- ENTP 6020 - Business Model Development & Planning
- ENTP 6022 - Digital Strategy for Entrepreneurs

**Finally, select two other ENTP courses numbered 6000 or higher, excluding ENTP 6801 or ENTP 6802.**

## Business Analytics

Business analytics merges data, technology, and mathematical models to produce evidence-based information relevant for today's business and government decision-making.

This specialization in business analytics trains you to construct and interpret models of big data, forecasting, optimization, and simulation. Analytics touch every aspect of business, driving the

way businesses understand not only their own processes, but also the way their customers behave.

**Required courses:**

- BANA 6610 - Statistics for Business Analytics  
**Note:** To enroll in BANA 6610 you must submit a petition that demonstrates your quantitative ability with either a GMAT quantitative score or other quantitative skills. Contact your advisor for the petition form.
- BANA 6620 - Computing for Business Analytics
- BANA 6670 - Prescriptive Analytics with Optimization

**Complete 1 additional BANA 6000 level course or 1 of the following:**

- ECON 5030 - Data Analysis with SAS
- ISMG 6080 - Database Management Systems
- ISMG 6470 - Text Data Analytics

## **Business Intelligence**

Modern business runs on information. Success may depend on the quality of the collection and analysis. Business Intelligence (BI) systems combine operational data with analytical tools to present complex and competitive information for planning and decision making, and improves the timeliness and quality of inputs to the planning and decision process.

**Select 4 of the following courses:**

- ISMG 6080 - Database Management Systems
- ISMG 6220 - Business Intelligence Systems and Analytics
- ISMG 6430 - Information Systems Security and Privacy
- ISMG 6470 - Text Data Analytics
- ISMG 6480 - Data Warehouse and Administration
- ISMG 6810 - Business Intelligence in Healthcare
- ISMG 6820 - Business Intelligence and Financial Modeling

## **Business Strategy**

Business Strategy examines the development of firm strategic plans and implementation including careful resource allocation and leadership skills essential for organizations to effectively meet their objectives. With this specialization, you get the necessary skills and knowledge used to develop and implement business strategy.

**Select 4 of the following courses: (NOTE: if you want additional flexibility, you may select 2 from this list (rather than 4) and 2 from the additional elective list below)**

- MGMT 6610 - Business Strategy Lab
- MGMT 6730 - Human Resources Management: Performance Management

- MGMT 6803 - Visionary Leadership
- MGMT 6804 - Bargaining and Negotiation
- MGMT 6825 - Sustainable Change Leadership: Turning Business Into a Force for Good

**If you wish additional flexibility, you may select two from the list above and select up to 2 of the following CMDT, ENTP, FNCE, INTB, MKTG or RISK courses:**

- CMDT 6682 - Commodity Valuation and Investment
- ENTP 6022 - Digital Strategy for Entrepreneurs
- ENTP 6826 - International Entrepreneurship
- FNCE 6310 - Financial Decisions and Policies
- FNCE 6340 - Business Firm Valuation
- FNCE 6382 - Survey of Financial Derivatives
- FNCE 6411 - International Corporate Governance
- FNCE 6420 - Mergers and Acquisitions
- FNCE 6480 - Financial Modeling
- INTB 6022 - International Business Negotiations

**OR**

- INTB 6500 - International Business Consulting
- MKTG 6010 - Marketing Strategy
- RISK 6309 - Strategic Risk Management
- RISK 6909 - Corporate Risk Management

## **Commodities**

The specialization is a new offering from the J.P. Morgan Center for Commodities. MBA candidates and business professionals should take this specialization for a better understanding of the commodities market in its entirety, from both the physical and financial perspective, including trading operations, investment management, commodities and investment banking. With strong industry support, courses in this specialization are catered to, and designed around, actual business problems in the commodities sector. Students will have an edge in competing for jobs in the commodity rich sectors of this state.

### **Required courses:**

- CMDT 6582 - Commodity Supply Chain Management
  - CMDT 6682 - Commodity Valuation and Investment
  - CMDT 6802 - Foundations of Commodities
- Complete one of the following courses:
- CMDT 6782 - Commodity Data Analysis
  - FNCE 6382 - Survey of Financial Derivatives

## Entrepreneurship

The Entrepreneurship specialization provides a range of focused courses geared towards individuals looking to start their own business. Courses are taught at the Jake Jobs Center for Entrepreneurship located in the heart of downtown Denver or at the new South Denver location near I25 and Lincoln Avenue. Complete four entrepreneurship courses to receive a specialization in Entrepreneurship. Additionally, you have opportunities to participate in a number of Jake Jobs Center programs; including the annual business plan competition, internships in area businesses, speaker programs with local entrepreneurs, and connection with new ventures.

**Complete four courses total.**

**Complete 3 courses with an ENTP 6000 or higher number, excluding ENTP 6801 and ENTP 6802.**

**Then select one of the following capstone courses:**

- ENTP 6020 - Business Model Development & Planning
- ENTP 6022 - Digital Strategy for Entrepreneurs

## Finance

Adding the finance specialization to your degree gives you skills relevant to different financial functional areas including corporate, investments, and financial institutions. You get the tools and skill sets you need for finance decision making and investment.

**Required course:**

- FNCE 6330 - Investment Management Analysis

**Select 3 FNCE or CMDT or RISK 6000 level or higher courses.**

## Information Systems

Complete any four ISMG 6000 or higher courses.

## International Business

International Business is quickly becoming simply business. Adding a specialization in International Business to your degree will help you to work internationally, and with international companies. From cross cultural management to legal aspects to marketing internationally. Prepare yourself for how business works today.

**Required course:**

- INTB 6000 - Introduction to International Business  
**OR**
- ENTP 6826 - International Entrepreneurship

**Complete 3 of the following courses:**

Any INTB 6\*\*\* course excluding INTB 6000. May include the following courses that are not INTB courses: MGMT 6827(Global Climate Change); ENTP 6826 (International Entrepreneurship) -- if not chosen as the required course above; MTAX 6431 (Inbound International Taxation); MTAX 6432 (Outbound International Taxation); RISK 6209 (Cyber Risk Management); or any travel study course offered by the Business School.

## Management

Complete the two following required courses:

- MGMT 6320 - Leading Organizational Change
  - MGMT 6360 - Designing Effective Organizations
- Select two additional courses from the list below:
- MGMT 6610 - Business Strategy Lab
  - MGMT 6821 - Managing for Sustainability
  - MGMT 6380 - Managing People for Competitive Advantage
  - MGMT 6803 - Visionary Leadership
  - MGMT 6804 - Bargaining and Negotiation

## Managing for Sustainability

More than ever before, major companies and entrepreneurial ventures are seeking competitive advantage and success by embracing sustainability — social and environmental responsibility — as a core business strategy. Farsighted leaders recognize that this new way of doing business requires skills in sustainable management including social entrepreneurialism, eco-efficiency, inter-disciplinary problem solving and a triple bottom line approach of economics, environment and society. Make your degree a green MBA by adding the Managing for Sustainability specialization and learn what businesses are facing in a world where resources are scarce, social safety nets are declining, and customers and commentators are concerned about a company's investment in corporate responsibility.

**Complete 4 of the following courses:**

- ACCT 6285 - Accounting and Finance for Sustainability
- BANA 6730 - Supply Chain Analytics
- ENTP 6030 - Entrepreneurship in Emerging Industries
- MGMT 6821 - Managing for Sustainability
- MGMT 6822 - Business Ethics and Corporate Social Responsibility



- MGMT 6825 - Sustainable Change Leadership: Turning Business Into a Force for Good
  - MGMT 6826 - Business and the Natural Environment
  - MGMT 6827 - Global Climate Change
  - MKTG 6830 - Marketing & Global Sustainability
  - MGMT 6840 - Independent Study **(by petition only)**
  - MGMT 5939 - Internship **(by petition only)**
- OR**
- MKTG 5939 - Internship **(by petition only)**

## **Marketing**

Marketing is about building long-term relationships between your firm and those who buy its offerings. Just how important is marketing to a firm's success? Well without it there would be no way to communicate with current or potential customers and no revenues. The Marketing specialization will give you the skills and confidence needed to effectively manage a firm and in particular those aspects associated with building profitable, long-term, business relationships.

**To complete the specialization select 4 MKTG 6000 level or higher courses.**

**You may also petition to have a marketing internship count toward the specialization. (MKTG 5939)**

## **Risk Management and Insurance**

The specialization in Risk Management and Insurance is designed for students who are interested in pursuing or advancing a career in the insurance industry, or other areas of risk management.

### **Required courses:**

- RISK 6809 - Principles of Risk Management & Insurance
- RISK 6909 - Corporate Risk Management

### **Complete one of the following courses:**

- CMDT 6682 - Commodity Valuation and Investment
- FNCE 6330 - Investment Management Analysis
- FNCE 6350 - Financial Innovations
- FNCE 6360 - Management of Financial Institutions
- FNCE 6382 - Survey of Financial Derivatives
- FNCE 6480 - Financial Modeling
- RISK 6129 - Practical Enterprise Risk Management
- RISK 6309 - Strategic Risk Management

**Complete one of the following courses:**

- BANA 6650 - Project Management
- CMDT 6582 - Commodity Supply Chain Management
- CMDT 6802 - Foundations of Commodities
- ENTP 6824 - Entrepreneurial Financial Management
- ISMG 6430 - Information Systems Security and Privacy
- ISMG 6450 - IT Project Management
- MGMT 6826 - Business and the Natural Environment
- MGMT 6827 - Global Climate Change
- RISK 6209 - Cyber Risk Management
- RISK 6409 - Employee Benefits and Workforce Risk Management
- RISK 6509 - Global Risk Management

## **Sports and Entertainment Business**

The Sports industry is the sixth largest industry in the United States and the Sports and Entertainment industries are converging. To become a professional in these industries, you need special skills. Through this specialization, you gain the tools to get ahead in both the sports and entertainment industries.

**Complete 4 of the following courses:**

- MKTG 6040 - Services Marketing for Traditional and Creative Industries
- MKTG 6820 - Sports & Entertainment Marketing
- MKTG 6822 - "Fan"tastical Consumers of American Sports and Entertainment
- MKTG 6824 - Sales and Negotiation for Consumer, Services, Sports, and Entertainment Industries
- MKTG 6826 - The Sports and Entertainment Industry
- MKTG 6834 - Global Sports & Entertainment Management

Students may also petition to take a marketing internship (MKTG 5939).

# **Business Administration: One Year MBA**

**Program Director:** Mary Malina

**Director of Operations:** Andrea Szabo

**E-mail:** [oneyearmba@ucdenver.edu](mailto:oneyearmba@ucdenver.edu)

**Telephone:** 303-315-8800

**Website:**

<http://www.ucdenver.edu/academics/colleges/business/degrees/mba/1yearMBA/Pages/default.aspx>

The One Year MBA is the fastest way to earn your MBA and gain valuable work experience at the same time. The program includes a fast-paced curriculum based on today's business world

with time for innovative electives that offer relevant specialized content. Competitive paid internships, or consulting coursework with the possibility of a paid graduate assistantship, add experience to your degree. Classes are held in person, which provides valuable interactions with faculty and classmates.

The program consists of 8 five-week terms and an international course abroad. There are occasional breaks between terms. You should expect approximately 10 hours a week in class, with another 25 hours as an estimate for homework, studying, and group projects outside of class. Please note that these estimates do not include the possible time spent at an internship/assistantship or time needed for consulting coursework, which generally will add another 20-25 hours a week to your time commitment. These numbers are estimates only and may vary for each student.

## **Admission and Application Process**

The admissions committee considers each candidate's entire record of achievement demonstrated through academic transcripts, GMAT scores, essays, required letters of recommendation, work experience and/or extracurricular and community activities. Interviews are by invitation only and may be completed in-person or through a virtual platform.

## **Previous Education**

Applicants' complete academic records, including GPAs and previous course work, are considered. Undergraduate degrees do not have to be in business, but they must be from regionally accredited colleges or universities.

## **Testing**

The GMAT or GRE is a requirement for application to the One Year MBA Program. Both verbal and quantitative scores on the GMAT/GRE are important indicators of potential for academic success. The GMAT website is [www.mba.com](http://www.mba.com).

International applicants whose first language is not English must take the TOEFL or IELTS exam and earn a minimum score 90 (IBT) or 575 (PBT) TOEFL or 6.5 IELTS to be considered for admission to the One Year MBA Program. Information on taking the TOEFL or IELTS can be obtained by visiting [www.ets.org](http://www.ets.org) and [www.ielts.org](http://www.ielts.org).

## **Work Experience**

The admissions committee does not require work experience to apply. Professional experience strengthens the application, as it adds relevance and depth to the learning process and enables candidates to contribute to and benefit from the knowledge of fellow classmates in the accelerated time frame of the program.

## Applications

The following are required for consideration of admission to the program.

- Application fee (domestic or international as appropriate)
- Online application for graduate admission
- Two (2) letters of recommendation from professional or academic acquaintances who are familiar with the applicant's academic/professional competence
- GMAT or GRE scores taken in the last five years sent directly from the Educational Testing Service. When registering for the GMAT, use code MPB-OG-65; for the GRE use code 4875.
- Official transcripts from each school, college or university previously attended past high school, sent directly to the Business School admissions office. A minimum baccalaureate degree is required
- Include answers to the four essay questions demonstrating a commitment to an accelerated MBA program
- A resumé outlining work experience
- For international students, a minimum official score of 90 (IBT) or 575 (PBT) TOEFL (TOEFL school code: 4875) or 6.5 IELTS is required to apply - test scores are valid for two years after test date
- If invited, a personal interview (in-person or through a virtual platform)

Applications are available at: <http://www.ucdenver.edu/academics/colleges/business/apply-now/Pages/MBA-MS-Admissions.aspx>

The One Year MBA uses a rolling admission system. The committee reviews applications when they are complete in all respects, including transcripts, GMAT/GRE scores and letters of recommendation.

Candidates are encouraged to submit their application as early in the process as possible. The priority deadline is April 15 with a final deadline of May 30. International applicants final deadline is May 15, to allow sufficient time for visa and travel arrangements.

All of the required admission materials should be sent to:

University of Colorado Denver  
The Business School  
Graduate Admissions  
Campus Box 165, P.O. Box 173364  
Denver, CO 80127-3364

For further information, contact the One Year MBA Program at: [oneyearmba@ucdenver.edu](mailto:oneyearmba@ucdenver.edu).

## Financial Aid/Scholarships

General financial aid is available for qualified students. Students should apply directly through the CU Denver Office of Financial Aid.

The One Year MBA program offers scholarships only for students enrolled in the program. You will be automatically considered for the following scholarships with the submission of your application.

### One Year MBA Scholarship

**From \$1,000-\$8,000 based on GPA, GMAT, and professional or personal leadership experience.** If you are awarded this scholarship, the award amount will be included in your admission letter. These scholarships are first come first serve. The earlier you apply to the program, the better chance of a scholarship. In previous years, these scholarships were allocated by April, so apply to the program as early as possible to be considered.

If you commit to the One Year MBA program, you will be able to apply for the following additional scholarships. These scholarships are limited in number, but each category could have more than one recipient. These scholarship awards are up to \$5,000.

- **One Year MBA Leadership Scholarship**
- **One Year MBA CU Denver Alumni Scholarship**
- **One Year MBA STEM Scholarship**
- **One Year MBA Global Citizen Scholarship**

These scholarship deadlines are in mid-May, so you must submit your application for the One Year MBA no later than April in order to apply for these scholarships.

## **Degree Requirements**

The 45 credit hour program consists of core courses, international business courses (conducted in Denver and abroad), career and professional development coursework, electives and either consulting coursework or competitive internships for credit.

**No courses may be waived, substituted or transferred into the program.** If a student finds it necessary to leave the accelerated program, credits already earned may be transferred to the Professional MBA program.

### **One Year MBA Core/Required Classes (34.5 credit hours)**

- AMBA 6201 - Leading in Organizations
- AMBA 6202 - Workforce Management
- AMBA 6210 - Data Analytics I
- AMBA 6211 - Data Analytics II
- AMBA 6220 - Business Law and Ethics
- AMBA 6230 - Financial Accounting
- AMBA 6231 - Management Accounting

- AMBA 6260 - Applied Microeconomics
- AMBA 6261 - Applied Macroeconomics
- AMBA 6280 - Finance Management I
- AMBA 6281 - Finance Management II
- AMBA 6270 - Operations Management
- AMBA 6271 - Supply Chain Management
- AMBA 6301 - Global Business
- AMBA 6240 - Marketing Principles
- AMBA 6241 - Marketing Strategy
- AMBA 6251 - Data Management Strategy
- AMBA 6250 - Digital Leadership and Governance
- AMBA 6290 - Strategy Foundations
- AMBA 6291 - Strategy in Practice
- AMBA 6310 - International Business Abroad

### **Experiential Learning Component (3 or 6 credit hours)**

The experiential learning component is fulfilled through the internship path or the consulting path.

- AMBA 5939 - Internship for MBAs
- AMBA 6330 - Introduction to Business Consulting for MBAs

### **OneYear MBA Electives (4.5-7.5 credit hours)**

Students in the Internship path will select a total of three out of six electives offered in the program. Students in the consulting path will select a total of five out of the six electives offered in the program. Each elective is 1.5 credits. These electives are subject to change each year.

Examples of electives have included such courses as:

Negotiations

Investments

Conflict Management

Personal Branding

Visual Analytics for Big Data

Digital Marketing Strategy

Digital Marketing Analytics

# Business Analytics MS

**Program Director:** Deborah Kellogg and Gary Kochenberger

**Telephone:** 303-315-8435

**E-mail for Preferred Contact:** Deborah.Kellogg@ucdenver.edu

The MS in Business Analytics focuses on modeling and applications which prepares you for a career as a business analyst in industry or government. Today, companies in every conceivable industry are reaping the benefits of using formal mathematical models to assist them in addressing complex business problems. Business Analytics graduates hold positions that bridge the gap between operations research/statistics specialists and management.

Learn to apply quantitative methods to real-world problems using modern methodologies adopted from statistics, operations research, and management science. The MS in Business Analytics focuses on applications of mathematical models in the workplace rather than the development of new research techniques. The managerial emphasis of our degree is accomplished through a comprehensive set of elective and required coursework such as data analysis, forecasting, project management, simulation, predictive analytics, prescriptive analytics, and supply chain management. Students have the opportunity to learn current analytics tools such as R, Python, database tools, and Tableau.

This degree is designed to be completed in 18 to 24 months. However, with careful planning, in consultation with an academic advisor, full-time students may be able to complete the degree in 12 months.

Requirements for the MS degree in Business Analytics are met by the following courses and options:

## Business Analytics Core I: (9 hours)

- BANA 6610 - Statistics for Business Analytics
- BANA 6620 - Computing for Business Analytics
- BANA 6670 - Prescriptive Analytics with Optimization

## Business Analytics Core II: (9 hours)

Complete three of the following courses:

- BANA 6630 - Time-Series Forecasting
- BANA 6640 - Decision Analysis
- BANA 6660 - Predictive Analytics
- BANA 6720 - Simulation Modeling
- BANA 6680 - Optimization for Machine Learning

## Business Analytics Electives: (12 hours)

Select any four courses which must include BANA courses numbered 6000 or higher, ISMG 6080, ISMG 6470, or ECON 5030.

## Notes and Restrictions

Students are not required to take a comprehensive examination or complete a thesis in the major field.

**Note:** Business School MS degrees typically allow students to transfer in 9 semester hours from another university. However, the MS in Business Analytics (BANA) allows students to petition to have a maximum of 6 semester hours transfer from another university. The transfer of *required* courses must closely reflect the educational objectives of the Master's degree in Business Analytics. The evaluation of substitute courses will include syllabi evaluation and the accreditation of the transferring institution.

**Total: 30 Hours**

## Chemistry MS

► Graduate School Rules apply to this program

**Program Director:** Scott Reed

**Email:** Scott.Reed@ucdenver.edu

**Office:** SI 4131

**Phone:** 303-315-7644

The MS program in chemistry focuses on providing students with the skills and knowledge necessary to conduct specialized research in preparation for careers in chemistry and related disciplines. Completing an MS in Chemistry at CU Denver can provide valuable experience that can help students land a job in the pharmaceutical, biotechnological, or other industry or can serve as a stepping stone for admission to a competitive PhD or health sciences program. Our faculty serve as mentors and advisors and assist students on the path to a more satisfying career in science. Prospective students are encouraged to contact the Graduate Program Director visit the Department of Chemistry website for additional details concerning the chemistry program, admission procedures, financial assistance and faculty research interests.

### Admission Requirements:

Applicants must meet the Downtown Campus Graduate School admission requirements according to Graduate School Policies and Procedures in addition to the following requirements of the Department of Chemistry:



An undergraduate major in Chemistry or a closely related discipline is required, including two semesters of organic chemistry as well as training in analytical chemistry, physical chemistry, and inorganic chemistry. Students missing more than one of these courses may be limited in the tracks that they are eligible to select. Students missing more than one of these courses may be provided a provisional admission. An undergraduate GPA of 3.0 (on a 4 point scale) is desired although each application is considered on its own merits.

- The GRE examination is recommended but not required.
- International students have additional admission requirements concerning immigration status, proof of financial responsibility and acceptable TOEFL or IELTS scores or completion of the CU Denver English as a Second Language Academy.
- Students currently in a BS program at CU Denver or elsewhere may want to consider the Chemistry BS/MS. This option includes the opportunity to enroll in graduate classes before enrolling in the MS program at CU Denver. At least 20 credits must be earned on campus. However, for the remaining courses, enrollment through CU ONLINE or on one of the other CU campuses is possible. Furthermore, the Chemistry Master's Program accepts transfer credits from accredited Universities with approval from the Graduate Program Director.

**In addition to selecting Plan I or Plan II, all MS students must select a track for their degree**

- Students interested in specializing within Chemistry must select from one of the tracks listed below. Each track has separate placement examinations. Therefore switching between tracks requires approval from the graduate program director

**Study Plans:**

<p><b>Plan I:</b></p> <p>Plan I (Thesis) is a research oriented program involving a minimum of 30 semester hours with the following requirements:</p>	<p><b>Plan II:</b></p> <p>Plan II (Course Work) is a coursework oriented program involving a minimum of 30 semester hours with the following requirements:</p>
<p>Students interested in specializing within Chemistry must select from one of the tracks listed below. Each track has separate placement examinations. Therefore switching between tracks requires approval from the Graduate Program Director</p>	
<p><b>Tracks:</b></p> <p>Track 1: Biochemistry</p> <p>Track 2: Synthesis and Measurement</p>	

Track 3: Molecular Modeling

Track 4: Traditional Chemistry

## Completing an MS in Chemistry - Graduation Requirements

### All Chemistry MS students must meet the following requirements for graduation:

- A cumulative GPA of 3.0 or better at the time of graduation
- A grade of *B-* (2.7) or better in all courses to be counted toward the degree.
- Compliance with all Graduate School Policies and Procedures
- Every student must select a thesis or non-thesis plan. As most of the requirements overlap, a student may switch between these plans with permission from the Graduate Program Director.
- Although degrees can be completed in as little as one year, all work must be completed within five years after enrolling in the first graduate class in the department unless an exception is granted by the program director.
- Students are eligible to apply for a research assistantship or a teaching assistantship positions. Students who are interested in improving teaching skills can enroll in CHEM 5655 Teaching Assistant Bootcamp. This course is required for all students who are interested in working as a teaching assistant in the department.
- A minimum of 20 semester hours must be earned in formal lecture courses in the Department of Chemistry. Other credits can be acquired through research, internships, thesis work, independent study, transfer credits, etc.

### Plan I (Thesis) is a research oriented program involving a minimum of 30 semester hours with the following requirements:

- An acceptable formal thesis consistent with the Graduate School Policies and Procedures
- Successful oral defense of the master's thesis before a committee of at least three Regular Graduate Faculty, two of whom must be tenure track faculty members and have an appointment with the Graduate School through the Department of Chemistry.
- Completion of a high quality research project suitable for publication in a peer-reviewed journal.
- 3 semester hours of CHEM 6950 - Master's Thesis
- All thesis students must complete 1 credit of CHEM 5610 - Understanding & Presenting Chemical Research no later than the semester before they defend their thesis.

## **Plan II (Course Work) is a coursework oriented program involving a minimum of 30 semester hours with the following requirements:**

- All Plan II students are required to take a final written examination about primary research articles in their discipline. This exam may be taken any semester after 20 semester hours of graduate course work have been completed. Students may attempt the exam once per semester a maximum of three times and must be registered during the semester that they attempt the final examination.
- All non-thesis students are encouraged to take 1 credit of CHEM 5610 - Understanding & Presenting Chemical Research
- Plan II students may arrange for an internship at a local company that employs Chemists and take up to 6 credits of CHEM 5939 - Internship Students must be in good academic standing and have completed 6 graduate semester hours at CU Denver before starting an internship. Approval of the graduate program director is required prior to selecting an internship and enrolling for credit.

## **Track Options:**

### **Track 1: Biochemistry**

Understanding of biochemical principles governing metabolic diseases, cancer and neurodegenerative diseases.

Take the following required course:

- CHEM 5810 - Graduate Biochemistry I

Take **one** of the following required courses:

- CHEM 5310 - Advanced Organic Chemistry
- CHEM 5530 - Advanced Physical Chemistry

Take **two** of the following elective courses:

- CHEM 5815 - Structural Biology of Neurodegenerative Diseases
- CHEM 5825 - Biochemistry of Metabolic Disease
- CHEM 5830 - Graduate Biochemistry II
- CHEM 5835 - Biochemistry of Gene Regulation and Cancer
- CHEM 5845 - Molecular Modeling and Drug Design
- CHEM 5600 - Graduate Topics in Chemistry (course topic must match to the topic area of the track and be preapproved by the Graduate Program Director)

CHEM 5310 or CHEM 5530 may be taken as electives, if not used as a required course above. Additional courses within the department (a minimum of 20 semester hours must be in Chemistry) and in other departments can be used to complete the total of 30 credits required for the degree. Course selections outside of the department must be approved by the Graduate Program Director.

## Track 2: Synthesis and Measurement

Students in this track will learn how to prepare and characterize molecules and materials and how to measure their properties.

Take **one** of the following required courses:

- CHEM 5010 - Advanced Inorganic Chemistry
- CHEM 5310 - Advanced Organic Chemistry

Take **one** of the following required courses:

- CHEM 5110 - Advanced Analytical Chemistry
- CHEM 5221 Practical Applications for Spectroscopy

Take **two** of the following elective courses:

- CHEM 5510 - Computational Chemistry
- CHEM 5530 - Advanced Physical Chemistry
- CHEM 5421 - Cannabis Chemistry
- CHEM 5845 - Molecular Modeling and Drug Design
- CHEM 5600 - Graduate Topics in Chemistry (course topic must match to the topic area of the track and be preapproved by the Graduate Program Director)
- CHEM 5700 - Environmental Chemistry
- CHEM 5810 - Graduate Biochemistry I
- CHEM 5815 - Structural Biology of Neurodegenerative Diseases
- BIOE 5420 - Special Topics in Bioengineering (course topic must be preapproved by the Graduate Director)

CHEM 5010, CHEM 5110, CHEM 5221 or CHEM 5310 may be taken as electives if not used as a required course above. Additional courses within the department (a minimum of 20 semester hours must be in Chemistry) and in other departments can be used to complete the total of 30 credits required for the degree. Course selections outside of the department must be approved by the Graduate Program Director.

## Track 3: Molecular Modeling

Students in this track will learn fundamental principles and modern techniques in computer modeling and apply the acquired knowledge to solve practical problems in chemistry, biochemistry, biophysics, and material sciences.

Take all of the following required courses:

- CHEM 5510 - Computational Chemistry
- CHEM 5530 - Advanced Physical Chemistry

Take **two** of the following electives:

- CHEM 5010 - Advanced Inorganic Chemistry
- CHEM 5310 - Advanced Organic Chemistry
- CHEM 5845 - Molecular Modeling and Drug Design
- CHEM 5600 - Graduate Topics in Chemistry (course topic must match to the topic area of the track and be preapproved by the Graduate Program Director)
- CHEM 5815 - Structural Biology of Neurodegenerative Diseases
- CHEM 5810 - Graduate Biochemistry I

Additionally, students are recommended to take one or two courses from other departments:

- MATH 3191 - Applied Linear Algebra
- MATH 4387 - Applied Regression Analysis
- MATH 5310 - Probability
- MATH 5387 - Applied Regression Analysis
- MATH 5660 - Numerical Analysis I
- CSCI 1410 - Fundamentals of Computing
- CSCI 2312 - Object Oriented Programming
- CSCI 4650 - Numerical Analysis I
- CSCI 5660 - Numerical Analysis I

Additional courses within the department (a minimum of 20 semester hours must be in Chemistry) and in other departments can be used to complete the total of 30 credits required for the degree. Course selections outside of the department and not on the above elective list must be approved by the Graduate Program Director.

## **Track 4: Traditional Chemistry**

Students that are interested in gaining experience in a broad range of chemistry including the critical sub-disciplines of organic, inorganic, analytical, and physical chemistry are encouraged to consider the traditional track.

Traditional Chemistry MS degree students must complete **the following required courses and a thesis or a final written examination.**

- CHEM 5010 - Advanced Inorganic Chemistry
- CHEM 5110 - Advanced Analytical Chemistry
- CHEM 5310 - Advanced Organic Chemistry
- CHEM 5530 - Advanced Physical Chemistry

Additional courses within the department (a minimum of 20 credit hours must be in Chemistry) and in other departments can be used to complete the total of 30 credits required for the degree. Course selections outside of the department must be approved by the Graduate Program Director.

## Civil Engineering MS and MEng

► Graduate School Policies and Procedures apply to these programs

### Graduate Degree Programs

The civil engineering graduate program is designed for both full-time and part-time students who want to advance their academic and professional skills in civil engineering and related areas. Many students are full time, while many also work full-time jobs and complete evening classes. Depending on a student's pace, the master's program takes 2-4 years to complete (on average). All graduate courses are offered in the afternoons, evenings or on Saturdays. Some courses, including all GIS classes, are offered online.

#### Specialty Areas:

##### Master of Science (MS)

- Construction Engineering and Management
- Environmental and Sustainability Engineering
- Geographic Information Systems (GIS)
- Geotechnical Engineering
- Hydrologic and Hydraulic Engineering
- Structural Engineering
- Transportation Engineering

##### Master of Engineering (MEng)

- Construction Engineering and Management
- Geomatics Engineering and Geographic Information Systems (GIS)
- Sustainable Infrastructure
- Transportation Systems

# Degree Requirements

Two MS degree programs are available.

Plan I - Master's Thesis: This plan requires 24 semester hours of graduate-level course work and 6 semester hours of master's thesis credit.

Plan II - Master's Report: This plan requires 27 semester hours of graduate-level course work and 3 semester hours master's report credits.

Master of engineering students must follow Plan 2 above. Additionally, of those 30 semester hours, at least 15 hours must be completed with CE classes, including the master's report. The remaining hours may be completed in related disciplines that supplement the chosen area of study. Both the MS and MEng degrees require satisfactory completion of a written comprehensive exam and an oral defense of the master's thesis or master's report to a committee of at least three graduate faculty. Every graduate student must also satisfy the degree requirements of the Graduate School on the Denver campus, specified in the Information for Graduate Students chapter of this catalog. Both the MS and the MEng degree programs must be completed within seven years of the date the student begins the degree program.

Courses for both the MS and MEng degree programs are selected by mutual agreement of the student and his/her faculty advisor after admission to the degree program. The advisor may also specify undergraduate courses that must be completed before starting graduate course work, but these will not count toward the semester hour requirements for the degree. The student's thesis or report topic must also be approved by the faculty advisor.

## Requirements for Admission

### **GPA and GRE Scores:**

Applicants must submit evidence of adequate preparation for graduate study by either (a) submitting official GRE scores, or (b) documenting an earned bachelor's degree with a GPA of 3.00 or higher from an institution accredited by a U.S. accreditation body, or an earned master's degree with a GPA of 3.50 or higher from an institution accredited by a U.S. accreditation body.

### **Transfer Credit:**

Master's students may transfer up to 9 semester hours from another institution toward their master's degree, if approved by their advisor.

### **Program Prerequisites:**

Prerequisite classes are in addition to the 30 semester hours needed to complete a master's degree, as they are necessary background information that is usually included in an engineering

bachelor's program. Students must receive a grade of C-minus or better for the prerequisite class to apply to the program.

Students may complete prerequisite classes either before or after being admitted to a degree program. However, applicants with too many prerequisites may not gain admission. For applicants completing prerequisites after admission, all prerequisite courses must be completed before 12 of the 30 master's semester hours are complete.

If prerequisites are taken while admitted to the master's program, students must maintain a 3.0 overall GPA, per Graduate School rules.

Requests for applications for graduate study in civil engineering should be addressed to

CU Denver Department of Civil Engineering  
Campus Box 113  
P.O. Box 173364  
Denver, CO 80217-3364

Applicants who are not citizens or permanent residents of the United States must apply through the Office of International Admissions, Campus Box 185, P.O. Box 173364, Denver, CO 80217-3364. All applicants for admission must submit complete credentials as outlined in the instructions that accompany the application materials. Learn more in the International Students section of the catalog.

## Communication MA

► Graduate School Policies and Procedures apply to this program

Our vibrant community of scholars and teachers is committed to providing a real world, hands-on, and theoretically robust master's degree that will enrich students' communication knowledge and skills. Our program is a 33-credit generalist degree designed to enhance students' intellectual and professional growth through the understanding, analysis and practice of effective communication. Our faculty members are nationally and internationally recognized leaders in their fields, and our students hail from all over the world.

Some students who complete our program receive offers to top-notch PhD programs while others accept or continue in positions related to communication management, strategic communication, public relations, media relations, human relations, and corporate and non-profit communications.

### Degree Requirements

1. Students must complete a minimum of 33 credits from approved courses.
2. Students must complete a minimum of 27 credits at the graduate level.



3. Students must earn a minimum grade of B (3.0) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail.
4. All credits for the degree must be completed with CU Denver faculty.

## **Required Introduction Course**

Students must take COMM 6013 in the first semester it is available.

- COMM 6013 - Introduction to Graduate Work in Communication

**Total: 3 Hours**

## **Required Methods Course**

Students must take COMM 5221 in the first semester it is available.

- COMM 5221 - Research Methods: Qualitative

**Total: 3 Hours**

## **Seminars**

Seminars are Communication courses at the 6000 level and are often special topics classes taught in faculty areas of expertise. Students must take two graduate Communication seminars in addition to the required COMM 6013 course. The optional COMM 6950 Master's Thesis or COMM 6960 Master's Project do not count as seminars.

**Total: 6 Hours**

## **Electives**

Students must complete seven elective courses. All electives must be at the 5000 or 6000 level; however, 1 course (3 credits) is permitted at the 4000 level from outside the Communication department. A total of 6 credits may be outside the Communication department.

Courses that count as electives include:

- Any Communication courses taken at the 5000 or 6000 level that do not fulfill another program requirement.

- Communication internships (max 6 credit hours)
- Communication independent studies (max 6 credit hours)
- Courses from outside the Communication department (max 6 credit hours; more with the approval of the student's advisor and the Director of Graduate Studies).
- Thesis credit, if applicable

**Total: 21 Hours**

## Optional Thesis

Students who choose to complete a thesis must register for between 3-6 semester hours of thesis work, which may substitute for one or two elective courses. Students who complete a thesis still complete a total of 33 credit hours.

**Total: 3-6 Hours**

All students must pass a comprehensive examination at the end of course work.

Students must comply with all Graduate School Policies and Procedures

**Degree Total: 33 Hours**

# Computer Science MS

► Graduate School Policies and Procedures apply to this program

The Department of Computer Science and Engineering requires master's degree candidates to complete a program of study consisting of at least 30 semester hours of graduate level computer science courses while maintaining a grade point average of at least 3.0. According to the Graduate School Rules, graduate courses with grades below B- cannot be applied toward the completion of the graduate degree. With prior approval by the Graduate Committee, a student may substitute up to nine semester hours with graduate mathematics or other engineering courses.

Students need to submit an approved Plan of Study to the department during the first semester of their admission. An academic advisor will consult with students to develop a Plan of Study. Students may choose **Plan I** (Thesis), **Plan II** (MS Project), or **Plan III** (Course Only). Both Plans I and II require successful defense of thesis or project in student's graduating semester.

- **Plan I-Thesis:** Students take 24 hours of graduate course work, and additionally write and defend a thesis, which counts for 6 hours of graduate thesis work. In this plan students will take a minimum of three "category A" courses, a minimum of four "category B" courses, and six hours of MS thesis.

- **Plan II-MS Project:** Students take 27 hours of graduate course work, and additionally write and defend a MS project report, which counts for 3 hours of graduate MS project work. In this plan, students will take four "category A" courses, a minimum of four "category B" courses, and three hours of MS project.
- **Plan III-Course Only:** Students must take 30 hours of graduate course work and, additionally, complete the final assessment during the student's graduating semester. In this plan, students will take four "category A" courses and a minimum of four "category B" courses. One of the "category B" courses must be from a designated list of courses that will satisfy a final MS course project.

Students are allowed a maximum of 3 credit hours of CS Independent Study (except in Plan III, course-only option).

Students may only take graduate engineering or graduate mathematics courses that are offered toward an MS degree in a degree-granting department, while at least 21 hours must be CS. Students must receive prior approval from the CSE graduate committee before taking any such courses. For example, courses offered through Continuing Education are not counted toward an MS degree in Computer Science.

The only exception for a student to take a graduate course from any other department is when

	<i>Minimum</i>	<i>Recommended</i>
<b>Operating system</b>	Windows 10 1809+	Windows 10 1809+
<b>CPU</b>	Intel Core i5 dual core 1.6 GHz or Intel Core i5 quad core 1.4 GHz	Intel Core i5/i7 2.2 GHz or faster
<b>RAM</b>	8GB (upgradable to 16GB)	12 to 16GB
<b>Disk Space</b>	256GB hard disk drive with 100GB free upgradable to 512 solid state drive	512GB Solid state drive with 100GB free
<b>Hard Disk Speed</b>		Install Windows and applications on a solid state drive
<b>Graphic Card</b>	integrated graphics card	dedicated graphics card
<b>Display</b>	1280 x 720 resolution	1920 x 1024 resolution
<b>Network Connectivity</b>	Ethernet + Wifi	Ethernet + Wifi

the course satisfies all of the following conditions:

1. It appears in a graduate program.
2. It is taken instead of 3 hours of CS Independent Study.

3. It is approved by the CSE Graduate Committee.

No more than 6 credit hours may be in the form of online courses.

Students in the CSE department are required to have a personal laptop with the following specifications:

## **Data Science in Biomedicine Track**

The Data Science in Biomedicine Track is offered under the Computer Science Master of Science degree program for students who choose Plan I - Thesis.

With this new track, students will adopt biomedical applications of data science (as a sample data science application domain) to learn data science methodologies and technologies. Upon successful graduation from the Computer Science MS program under the Data Science in Biomedicine track, students will have an official designation of data science training within their degree, which will help with employment and other opportunities.

The Data Science in Biomedicine Track requires master's degree candidates to complete a program of study consisting of at least 36 semester hours of graduate level computer science courses while maintaining a grade point average of at least 3.0. According to the Graduate School Rules, graduate courses with grades below B- cannot be applied toward the completion of the graduate degree. In this plan students will take will take three "category A" courses, a minimum of four "category B" courses, six hours of MS thesis and an additional 3 courses of electives from a list of courses related to Biomedical Computing and Informatics, Bioinformatics, Health Informatics, etc.

## **Adequate Progress toward MS in Computer Science Degree**

Students are expected to finish the MS degree program within five years. Candidates for the MS degree may not get credit for a course taken longer than five years before the date on which the degree is to be granted.

Students who do not enroll for any course work relevant to computer science in a given semester (summer semesters excluded) must supply the Department of Computer Science and Engineering with a written statement describing the reason for the inactivity. Students who are inactive for three consecutive semesters (summer semesters excluded) will be removed from the program, and must re-apply for admission.

## **Certificate Programs**

### **Graduate Certificate in Software Engineering**

This certificate is designed for working professionals, or computer science students beginning careers, in the fields of software engineering and software development. This certificate requires a previous computer science or systems engineering degree. At the start of the

certificate program students are expected to have a strong understanding of software development in terms of software construction, software coding and basic software design.

Students will complete a sequence of three separate graduate-level courses: Software Architecture, Software Project Management Support and Operating Systems or Advanced Computer Architecture.

## **Graduate Certificate in Cyber Security & Defense**

This certificate is designed for working professionals in the field of computer science, network and/or security operations. This certificate will require a previous Computer Science or similar Bachelor Degree. It consists of graduate-level courses in cybersecurity, operating systems, and computer networks or cloud computing. The certificate program in Cyber Security and Defense will prepare Computer Science professionals to identify, analyze, and mitigate technical cybersecurity-related vulnerabilities, exploits and attacks against network and critical cyber infrastructure. The coursework emphasizes practical technical skills, analysis and research focused on current cybersecurity issues.

Students will complete a sequence of four separate graduate-level courses: Cybersecurity Programming and Analysis, Cyber and Infrastructure Defense, and two of the following- Operating Systems, Computer Networks or Cloud Computing.

For up-to-date information, please refer to the current graduate handbook from the CSE department website at [engineering.ucdenver.edu/cse](https://engineering.ucdenver.edu/cse).

# **Counseling MA**

Return to: School of Education & Human Development

- Degree
- Admission Requirements
- Program Requirements

**Office:** Lawrence Street Center, 701

**Telephone:** 303-315-6300

**E-mail:** [academicservices@ucdenver.edu](mailto:academicservices@ucdenver.edu)

**Website:** <https://education.ucdenver.edu/>

## **Faculty**

Information about faculty in the Counseling program is available online at <https://education.ucdenver.edu/about-us/faculty-directory>

## **Degree**

The Master of Arts degree in Counseling program prepares professionals for community/mental health agencies, private practice, public schools, and institutions of higher education. Students accepted into the Counseling program follow one of the four concentration areas. The clinical mental health counseling track follows state licensure requirements for Licensed Professional Counselor (LPC); the couple and family therapy/counseling track follows state licensure requirements for licensure as a Licensed Marriage and Family Therapist (LMFT) and state licensure requirements for LPC; the school counseling track follows the requirements for both the LPC and Colorado Department of Education license as a school counselor; and the higher education and student affairs track follows the Counsel for the Advancement of Standards in Higher Education standards but does not lead to any counseling license.

The clinical mental health, couple and family therapy, and school counselor tracks consist of 63 semester hours. Core courses that are common to all licensure areas of study are followed by courses specific to concentration area. The clinical mental health, couple and family therapy /counseling, and school counselor tracks require a practicum (150 clock hours) and an internship (600 clock hours). The couple and family therapy/counseling (CFTC) track requires 500 hours of clinical work, 40% of which must be relational (couple and/or family counseling/therapy) clinical hours. The CFTC track does not distinguish between practicum or internship in the collection of these clinical hours. For students in these tracks, the master's degree is a three to three and a half-year program with course work for two-two and a half years followed by a 12-16 months of practicum and internship.

The higher education and student affairs track consists of 39 semester hours. Students in this track are required to complete a 600-hour internship. This master's degree is a two to three year program with course work for one and a half to two years followed by a semester-long internship.

The clinical mental health, couple and family therapy, and school counselor tracks are nationally accredited by CACREP, the Council for the Accreditation of Counseling and Related Educational Programs. The program is currently working on getting the couple and family track accredited by COAMFTE, the Commission on Accreditation for Marriage and Family Therapy Education. The program in higher education and student affairs aligns with the Council for the Accreditation of Standards (CAS).

## **Admission Requirements**

Successful applicants to the Counseling program will have obtained a minimum 2.75 undergraduate GPA. Also, applicants will submit a current resume, a letter of intent, three letters of recommendation, and additional required materials. Applicants meeting these minimum standards may be invited to a half-day group interview that involves program orientation, small group interviews, a writing assignment, and a group exercise.

A prerequisite course in basic statistics (undergraduate or graduate level) is required prior to enrollment in the program or may be completed during the first semester in the program.

Application materials are available at <https://education.ucdenver.edu/academic-services/admissions>. All materials must be submitted online by the appropriate deadline: September 15 for spring semester and January 15 for fall semester.

## **Program Requirements**

Students in the Counseling program are required to maintain at least a B (3.00) grade point average in all coursework attempted while enrolled. Courses in which grades below a B- (2.7) are received may only be counted toward the degree with faculty permission. Students receiving a C or below in any of the clinical skill building courses: COUN 5100, 5110, 5160, 5910, 5930, 6140, or 7100 will be required to repeat the course and follow any remediation plan that may be developed to meet the students' specific needs. Students in clinical mental health, couple and family counseling/therapy, and school counselor tracks must also take a national comprehensive examination, the Counselor Preparation Comprehensive Exam (CPCE), after completing all core courses. Students in the higher education and student affairs track must complete a comprehensive examination in the last semester of study. Students in any track may choose to conduct research and submit a thesis (research conducted under faculty advisement) instead of taking a comprehensive examination.

## **Counseling Core**

COUN 5010 - Counseling Theories  
COUN 5100 - Techniques of Counseling  
COUN 5110 - Group Counseling\*  
COUN 5150 - Family Counseling/Therapy\*  
COUN 5330 - Counseling Issues and Ethics\*  
COUN 5400 - Career Development  
COUN 5810 - Multicultural Counseling Issues for Individuals and Families  
LDFS 6200 - Human Development Over the Life Span  
RSEM 5110 - Introduction to Measurement  
RSEM 5120 - Introduction to Research Methods

CPCE\* to be taken after all Counseling core classes are completed.

\*not required for students in the higher education and student affairs track

**Total: 30 Hours**

## **Additional Requirements for Clinical Mental Health Counseling (MA)**

COUN 5160 - Techniques in Family Therapy  
COUN 5280 - Addictions Counseling  
COUN 5820 - Strategies of Agency Counseling

COUN 6250 - Mental Health Diagnosis  
COUN 7100 - Advanced Theories and Techniques in Psychotherapy  
Two Additional Electives (6 semester hours)  
COUN 5910 - Practicum in COUN  
COUN 5930 - Internship in Counseling

**Total: 33 Hours**

## **Additional Requirements for School Counselor License (MA)\***

COUN 5280 - Addictions Counseling  
COUN 5425 - Developing & Implementing a School Counseling Program: ASCA  
COUN 5815 - Introduction to School Counseling  
COUN 5915 - Practicum in School Counseling  
COUN 6140 - Counseling Children, Adolescents and Their Parents  
COUN 6230 - Developmental Counseling in Schools: Prevention & Intervention  
COUN 6250 - Mental Health Diagnosis  
COUN 5910 - Practicum in COUN  
COUN 5930 - Internship in Counseling

The Professional School Counselor Praxis exam (5421) is required for the Colorado Department of Education license for school counselors.

**Total: 33 Hours**

\*100-hour practicum is required in the schools (COUN 5915). Three hundred of the 600 hours of internship must be in a concentrated environment. Full-time experience consisting of at least a four-hour block of time each day is required. Students may not do their internship in their primary employment (agency or school setting). For school counseling, three hundred (300) hours of internship are needed at the middle and secondary level for a K-12 program. COUN 5150, 6140 and 7100 are necessary for students to work with school-related family issues, individual counseling and children's counseling in practicum and internship.

## **Additional Requirements for Couple and Family Therapy (MA)**

COUN 5160 - Techniques in Family Therapy  
COUN 6170 - Issues In Family Studies  
COUN 5180 - Counseling Couples  
COUN 6000 - Introduction to Sex Therapy  
COUN 6140 - Counseling Children, Adolescents and Their Parents  
COUN 6160 - Advanced Assessment: Theory and Treatment in Family Systems  
COUN 6250 - Mental Health Diagnosis  
COUN 5910 - Practicum in COUN  
COUN 5930 - Internship in Counseling



**Total: 33 Hours**

## **Additional Requirements for Higher Education and Student Affairs\***

COUN 5050 - Foundations of Student Affairs

COUN 5500 - Diversity in Higher Education

COUN 5130 - Student Development Theory

HDFR 5003 - Leadership and Organizations

COUN 5070 - Higher Education Law and Ethics

COUN 5940 - Internship in Higher Education and Student Affairs

Comprehensive Exam

**Total: 21 Hours**

\*Students who have completed higher education and student affairs courses as part of the Human Development and Family Relations undergraduate major or minor at CU Denver, will be allowed to use these courses to satisfy program requirements; but, they will not receive graduate credit for these courses. As such, these students will be required to take elective courses to reach the 39 credit hour requirement.

# **Criminal Justice, MCJ**

## **Introduction**

►Graduate School Policies and Procedures apply to this program

The Master of Criminal Justice (MCJ) program is designed for students interested in comprehensive professional graduate education in criminology and criminal justice. It is intended to provide an in-depth understanding of existing structures, practices, and challenges within this field of study.

Part of an academic and professional field of study, the MCJ program prepares students to administer, analyze, evaluate, and facilitate improvements in the rationality and responsiveness of the criminal and juvenile justice systems. Research design capability is emphasized alongside skills required for analyzing empirical data and innovating in crime control and prevention. Students who advance through the program acquire strategies and skills necessary for promoting individual, organizational, and social change.

To learn more about our renowned faculty, please visit our website to view our faculty bios.

**Program Director:** Lorine Hughes, PhD

## **Program Delivery**

- Courses are offered on campus, online, and in hybrid formats.

## Program Requirements

- Students must successfully complete 36 credit hours of approved coursework.
  - Of these 36 credit hours, students must complete a minimum of 27 credits hours of coursework within Criminal Justice (CRJU).
- Students must maintain at least a 3.00 cumulative GPA in this program.
- Students must earn at least a B- in all coursework to be accepted for graduate credit towards the degree.
- No more than 6 credit hours of Independent Study may be applied toward the degree.
- This program must be completed within 7 years.

Students must complete the following **five** required core courses:

- CRJU 5001 - Criminal Justice Systems, Policies, and Practice
- CRJU 5002 - Criminological Theory
- CRJU 5003 - Research Methods
- CRJU 5004 - Statistics for Criminal Justice
- CRJU 5005 - Law & Society

Students must complete **six** elective courses, from a pre-approved list and/or with approval from the program director.

Internship: Students who have not had one year of criminal justice experience following the awarding of their bachelor's degree will be required to complete CRJU 6910, Internship. A minimum of 240 hours of supervised work is required in order to earn 3 hours of credit. The internship requirement may only be waived with the permission of the MCJ Program Director. If required, the internship will count for 1 of the 6 elective courses. Students must complete 18 credit hours of MCJ coursework with at least a 3.00 cumulative GPA prior to enrolling in the internship course.

- CRJU 6910 - Internship in Criminal Justice

Students must complete **one** of the following:

- CRJU 5361 - Capstone Seminar (during the final semester)
- CRJU 6950 - Master's Thesis (taken for 3 or 6 credits with approval by and in consultation with the program director prior to enrolling in the course)

## Optional Concentrations

Students may select one of the concentrations below or complete the MCJ without a specified concentration. Students completing a concentration take their electives in the area of their concentration, complete the advanced seminar project in the area of their concentration and are advised by faculty from the concentration.

### Crime Analysis Concentration

The Crime Analysis concentration coursework emphasizes criminal justice and criminology related subjects; however, the analytic skills learned in this concentration are not industry-specific and easily can be transferred to non-criminal justice and criminology related fields.

### Required Coursework

The concentration in Crime Analysis requires a total of 15 credit hours. All students will complete the five required courses below:

- CRJU 5003 - Research Methods
- CRJU 5004 - Statistics for Criminal Justice
- CRJU 5325 - Qualitative Methods for Criminal Justice
- CRJU 5331 - Crime Analysis and GIS
- CRJU 5015 - Intelligence Writing and Briefing

**Total: 15 Hours**

### Disaster, Hazards and Emergency Management Concentration

The concentration in Disasters, Hazards and Emergency Management (DHEM) provides advanced education in the management of emergencies, hazards, disasters and community resilience. DHEM is designed for students who work or will work in the field of natural and man-made hazards, community resilience and emergency management.

### Required Coursework

The DHEM concentration requires a total of 12 credit hours.

Students must complete the following course:

- CRJU 5720 - Public Policies for Hazards and Disasters

Students must complete at least **one** of the courses below:

- CRJU 5650 - Public Service in Emergency Management and Homeland Security
- CRJU 5655 - Principles of Emergency Management

- URPL 6645 - Disaster/ClimateChangePlanning

Students must complete **two** pre-approved elective courses. For a list of pre-approved electives, please consult your Academic Advisor.

**Total: 12 Hours**

## **Emergency Management and Homeland Security Concentration**

The concentration in Emergency Management and Homeland Security (EMHS) provides advanced education in the management of emergencies, hazards, disasters and homeland security. The EMHS program is designed to meet the needs of students who wish to work, or are currently working, in the field of emergency management and homeland security.

The EMHS program is also offered as a stand-alone Emergency Management and Homeland Security (EMHS), Graduate Certificate program.

### **Required Coursework**

The EMHS concentration requires a total of 12 credit hours.

Students must complete the following course:

- CRJU 5650 - Public Service in Emergency Management and Homeland Security

Students must complete at least **one** of the courses below:

- CRJU 5655 - Principles of Emergency Management
- CRJU 5720 - Public Policies for Hazards and Disasters
- URPL 6645 - Disaster/ClimateChangePlanning

Students must complete **two** pre-approved elective courses. For a list pre-approved electives, please consult your Academic Advisor.

**Total: 12 Hours**

## **Gender-Based Violence Concentration**

The concentration in Gender-Based Violence (GBV) focuses on the management and policies surrounding gender-based violence, as well as grass-roots social justice work and best practices in this emerging field. Each fall, 10 to 20 students are accepted into the GBV cohort, allowing the participants to build a strong community of advocates and learners.

This program combines online courses with four intensive campus seminars spaced throughout the two-year program. Nonresident students pursuing the MPA with a concentration in Gender-

Based Violence may also qualify for reduced tuition through the Western Regional Graduate Program which covers 14 western states.

The Gender-Based Violence program is also offered as a stand-alone Gender-Based Violence (GBV) Graduate Certificate program.

## **Required Coursework**

The concentration in GBV requires a total of 12 credit hours. All students will complete the four required courses below.

- CRJU 5910 - Nature and Scope of Interpersonal Violence
- CRJU 5920 - The Psychology of Interpersonal Violence
- CRJU 5930 - Interpersonal Violence Law and Public Policy
- CRJU 5940 - Interpersonal Violence Leadership, Advocacy, and Social Change

**Total: 12 Hours**

## **Nonprofit Management Concentration**

The concentration in Nonprofit Management prepares students to become innovative and critical thinkers in the areas of nonprofit organizational management and public policy, with a unique approach that bridges theoretical knowledge with real-world experience. As students prepare for their careers or advancement in their current positions, they gain insight into the interdependence between the nonprofit, public, and for-profit sectors. Graduates are able to span the boundaries of these three sectors to assess community needs, navigate the realm of public policy, and strategically and effectively manage organizations that ultimately benefit society.

SPA's affiliation with the Nonprofit Leadership Alliance gives students the opportunity to earn the Certified Nonprofit Professional (CNP) credential through completion of the Nonprofit Management concentration coursework, additional required extracurricular activities, and an examination. Contact [cnp@ucdenver.edu](mailto:cnp@ucdenver.edu) for more information about this credential.

The Nonprofit Management program is also offered as a stand-alone Nonprofit Management Graduate Certificate program.

## **Required Coursework**

The Nonprofit Management concentration requires a total of 12 credit hours. Of these 12 credits, all students will complete the required course below as well as three pre-approved electives. For a list of pre-approved electives, please consult your Academic Advisor.

- CRJU 5010 - Seminar Nonprofit Management

**Total: 12 Hours**

# Critical Pedagogy MA

## Program Plan

### Core Courses (12 credits)

- UEDU 5660 - History of Schooling in the United States
- UEDU 5240 - Culture of Education Policy
- UEDU 5070 - Curriculum Theories in Urban Education
- RSEM 5080 - Research In Schools

### Focus Area/Elective Courses (9 credits)

Elective courses are grouped in the following areas:

- Pedagogy for 21<sup>st</sup> Century Learners,
- Teaching for Cultural and Linguistic Diversity
- Math

Students will complete 3 courses from any of these.

### Alternative Licensure Core\* (9 credits)

- EDFN 5010 - Social Foundations and Cultural Diversity in Urban Education
- UEDU 5040 - Planning for Learning
- UEDU 5934 - Extended Internship & Learning Community

### Total Credit Hours 30

\*Students who successfully complete the ASPIRE to Teach alternative licensure program qualify for the 9 credits in the Alternative Licensure Core. All other students are required to take an additional 9.0 elective/focus area credits.

### Cumulative Portfolio

The MA portfolio counts as the comprehensive exam for the master's degree. The portfolio is an accumulation of the performance-based assessment completed during the courses and reflects on the student's development over the degree program.

### Program Requirements and Courses

To complete the Curriculum & Instruction program and earn a master's degree, students must complete the appropriate course work as outlined in the table above. All courses require a grade of B- or better to count towards the MA and a minimum 3.0 GPA is required for graduation.

# Early Childhood Education MA

## Early Childhood Education Program

The Early Childhood Education (ECE) program leads to a master's degree in early childhood education and/or Colorado teacher license/endorsement in early childhood special education (ECSE) specialist. The program prepares leaders who will enrich the life experience of young children (ages birth to 8 years) and their families through a variety of professional roles.

The ECE program focuses on building and supporting learning and development of all children across inclusive settings in the natural environments where they live, grow and learn. Our program emphasizes family-centered practices, culturally sustaining teaching and is inspired by the potential of all children and families. The program draws on university resources and the clinical expertise of various professionals and early childhood partners in the community. Field experiences are a part of each course and provide an opportunity for each student to gain knowledge, abilities and dispositions while interacting with children, families, program staff and community agencies. Fieldwork experiences are designed for students to apply knowledge and practice skills in a closely supervised learning environment.

## Curriculum and Program Requirements

### Semester Hour Requirements

Personalized Professional Master's degree in ECE: 30 semester hours

This program allows candidates to work closely with faculty advisors in specific course selection that is most relevant for them and their desired professional path, including courses outside the ECE program area.

The early childhood education program provides potential preparation in:

- language and literacy development,
- child growth and development,
- teaching and learning approaches with young children,
- learning, development and education grounded in culture, context, and identity of young children,
- research methods for education,
- early childhood curriculum and program development for culturally and linguistically diverse inclusive classrooms,
- collaborative program development and supports for children with families and communities,

- leadership of programs and early childhood professionals for practice, advocacy and social change,
- screening and assessment of young children,
- inclusive intervention strategies with infants, preschoolers, and primary aged children,
- social emotional competence and classroom support including for children with severe and persistent challenging behavior,
- working as a participatory member of a transdisciplinary team,
- learning and development of children from diverse sociocultural backgrounds and abilities,
- inclusive services for children diagnosed with low incidence disabilities including autism, developmental delay and chronic illness

Coursework and plans of study are available at <https://education.ucdenver.edu/academic-services/student-resources/graduate/early-childhood-education>

## Capstone Requirement

The Early Childhood Education Capstone fulfills the COMPS requirement for MA students. The intent of the Capstone is to help candidates synthesize learning through a final project that speaks to academic and professional development in the ECE Program. The capstone should tell the story of what was learned, specific areas of interest, address ongoing barriers experienced in the field, and future professional plans. All ECE MA completers must do a Capstone project, and register for the 3 credit Capstone class.

### Program Requirements and Courses

To complete the Early Childhood Education program and earn a master's degree and/or license/endorsement, students must complete the appropriate course work as outlined. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

### Course Scheduling

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, three-to eight-week sessions are offered, and courses may be in the morning, afternoon or evening.

### Planning

For practicing full-time teachers, we recommend taking two courses each fall and spring semester, and up to two courses each summer. If you prefer a less intensive course load, we recommend one course each fall and spring semester. Please review with your faculty advisor your preferred plan.

### Active Status



Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

# Economics MA

► Graduate School Policies and Procedures apply to this program

**Graduate Advisors:** Brian Duncan and Hani Mansour

The MA program in economics is designed to train students in the quantitative and applied economic skills that will best enhance their future employment opportunities in the private and public sectors, or their pursuit of PhD studies in economics or related fields.

Our MA program emphasizes extensive training in mathematical and quantitative analysis, including the provision of substantial exposure to applied econometrics, working with large and diverse data sets, and a wide range of statistical software. The program gives students the applied skills that employers demand, provides those pursuing advanced degrees an edge in gaining admission to top-flight PhD programs-and enhances the likelihood of the student's ultimate success.

## Admission Requirements

- Meet all general admission requirements of the Graduate School (including a 2.50 undergraduate grade-point average).
- Submit three letters of recommendation (at least two letters should come from individuals who are familiar with your scholarly record. The third can be an additional academic reference or professional reference from someone who knows you well and can comment on your potential as a graduate student).
- Submit official transcripts from all colleges attended.
- Have completed 15 credit hours of undergraduate economics, including intermediate microeconomic theory and intermediate macroeconomic theory (upper division courses).
- Have completed courses in calculus and statistics (preferably a year of calculus and a course in econometrics or similar upper division statistics course. A course in linear algebra and/or differential equations is recommended).
- Submit GRE scores. All applicants, international and domestic, must submit GRE scores regardless of prior degrees, course work, or work experience. The institution code for CU Denver is 4875. Most students admitted to the MA program in economics score 154 or above (690 or above using the prior test scale) on the quantitative section of the GRE. However, this is not a minimum GRE cutoff score, nor is it a score above which

admission is guaranteed. GRE scores are used in conjunction with other indicators of academic success at the Master's level. Applicants must show strong evidence of quantitative ability either through high grades in math, statistics, and economics courses, a high quant score on the GRE, or preferably both.

- International students must submit TOEFL scores. The minimum required score is 203 (computer-based TOEFL), 75 (IBT-based TOEFL), 537 (paper-based TOEFL), or 6.5 (IELTS). The institution code for CU Denver is 4875. The minimum TOEFL scores are a requirement of the Graduate School and cannot be waived by the department of economics. The Graduate School may waive the TOEFL requirement for applicants who have attended a college or university in the United States as a full-time student and have completed two semesters of academic work with a "B" average (3.0 GPA or higher). Please contact the International Admissions office if you have questions about this requirement.

### **Application Deadlines:**

**Fall - June 1**

**Spring - December 1**

The Department of Economics accepts late applications after these official deadlines. However, there is no guarantee that a late application will be processed in time for the start of the semester. Students are encouraged to apply well in advance the application deadline.

International students who apply after the June 1 or December 1 deadline may not have time to obtain a student visa. Being admitted to the MA program in economics does not guarantee that a student will receive a student visa in time for the start of the semester. International students who are admitted to the MA program, but fail to obtain a visa in time, may defer admission for up to one year. All questions about student visas should be directed to the Office of International Admissions.

## **Degree Requirements**

1. Students must complete a minimum of 30 credit hours of coursework, of which 21 hours are core requirements. Each student's plan will be worked out in conjunction with the graduate advisor. Students are expected to meet all course prerequisites.
2. Students must complete a minimum of 30 graduate (5000 and above) level credit hours.
3. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail. No course may be taken more than twice and only one attempt will retain the credit.
4. Students must complete all credits for the degree with CU Denver faculty.

## Core Courses

- ECON 5073 - Microeconomic Theory
- ECON 5083 - Macroeconomic Theory
- ECON 5803 - Mathematical Economics
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II
- ECON 6053 - Seminar In Applied Economics **or** ECON 6054 - Seminar In Applied Economics II
- ECON 6073 - Research Seminar

**Total: 21 Credits**

## Electives

Three courses numbered 5000 or higher with an ECON subject code. After completing 6 credit hours of ECON 6053/6054 as part of the economics core, additional ECON 6053/6054 courses may be counted as electives.

**Total: 9 Credits**

**Degree Total: 30 Credits**

## Electrical Engineering MEng

A minimum of 30 credit semester hour of academic work acceptable to the Advisory Committee (within the rules established by the College of Engineering, Design and Computing) will be required for the Master of Engineering degree. In compliance with the Graduate School rules, the minimum grade required for a unit to count toward the 30 semester hours is a B minus (2.7). To couple this degree with electrical engineering, at least 15 of these hours must be 5000-level or above in electrical engineering courses, and must be taken in the CU Denver Department of Electrical Engineering. As many as 15 hours can be taken outside of electrical engineering, including 3 credit hours for the master of engineering project. The project should cover some area of creative investigation performed by the student and may relate directly to his/her professional work. The project must be defended orally before the Advisory Committee.

The student who wishes to enter the master of engineering program should apply to the electrical engineering department in the same manner as a master of science applicant.

## Electrical Engineering MS

To fulfill the requirements for the master of science in electrical engineering (MSEE), the Electrical Engineering Department at CU Denver requires that within a seven-year period, the candidate completes an approved program in one of two options: (a) a **thesis option** consisting of at least 30 semester hours, including 6 credit hours of MS thesis, or (b) a **course-only option** consisting of at least 30 semester hours. It is also required the MSEE candidate maintain a grade point average of 3.0 or higher. In compliance with the Graduate School rules, the *minimum* grade required for a unit to count toward the required semester hours is B minus (2.7).

For both thesis and course-only master of science in electrical engineering options, the student must select a primary area of concentration and a secondary area of concentration, among the six areas listed below. The areas should be chosen with the student's graduate advisor. The student must take at least four 3-hour graduate courses (12 credit hours) in his/her primary area of concentration, and at least two 3-hour graduate courses (6 credit hours) in his/her secondary area. All of these courses must be taken through the CU Denver EE Department. The remaining courses may be taken from any area of concentration. A student may also take one 3-credit independent study course with a graduate faculty member of the CU Denver EE department. At least 21 graduate credit hours must be taken from the CU Denver EE Department. At the discretion of the EE graduate committee, a maximum of nine graduate credits may be transferred from other programs.

The CU Denver EE Department offers six areas of concentration at the master's level:

1. Communications and Signal Processing
2. Computer Engineering and Embedded System Design
3. Controls and Signal Processing
4. Electromagnetic Fields, Waves and Optics
5. Energy and Power Systems
6. Microelectronics and VLSI

## English MA

► Graduate School Policies and Procedures apply to this program

**Program Director:** Nancy Ciccone

**Telephone:** 303-315-7833

**E-mail:** nancy.ciccone@ucdenver.edu

The department offers an English MA degree focused around five core courses with specializations available in literature, rhetoric and the teaching of writing, and applied linguistics.

Contact the graduate program director for more information on these programs.

## Requirements for Admission

The deadline for summer or fall admission is April 1; the deadline for spring is October 1. Complete applications must include the following:

- A completed University of Colorado graduate application
- One copy of all graduate and undergraduate transcripts, and for any nondegree courses previously taken
- Three letters of recommendation in which the recommender specifically addresses the candidate's ability to pursue successfully the program chosen
- Graduate Record Exam scores are optional. You may provide them if you wish, but they are no longer required.
- Evidence of a 3.0 GPA in previous courses
- A one-page statement of purpose
- 10-page critical writing sample

In addition to these requirements, applicants for the program must have successfully completed 24 semester hours in English courses (graduate or undergraduate), excluding courses in composition, creative writing or speech. At least 15 of these semester hours must be at the upper-division level.

## Transfer of Credits from Other CU Campuses

Students admitted to graduate study in English may complete all of their course requirements for the MA degree at CU Denver. Up to 9 semester hours (total) may be transferred from the University of Colorado Boulder, University of Colorado Colorado Springs or other graduate programs; however, such transfer requires the written approval of the graduate advisor. Only 9 semester hours of courses taken at CU Denver before acceptance into the program can be counted toward the degree. Further, work already applied toward a graduate degree received at the University of Colorado or at another institution cannot be transferred toward another graduate degree of the same level at CU Denver. (For other rules concerning transfer of graduate credits, see the Graduate School Policies and Procedures) For more information, contact the graduate program director at 303-315-7847.

## Degree Requirements

### GENERAL REQUIREMENTS

- Satisfactory completion of all required course work
- Demonstrated fourth-semester proficiency in a foreign language. Old English or Latin will also satisfy this requirement
- Compliance with all graduate school policies and requirements

## **COURSE REQUIREMENTS (30 SEMESTER HOURS MINIMUM)**

1. Students must complete a minimum of 30 ENGL credit hours.
2. Students must complete all courses at the graduate (5000 and above) level.
3. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail.
4. Students must complete a minimum of 21 ENGL credits with CU Denver faculty,
5. All courses are 3 credit hours unless otherwise noted.
6. All courses must be completed in the ENGL subject code.

## **REQUIRED COURSES**

- ENGL 5100 - Introduction to Graduate Studies
- ENGL 5135 - English Language Study
- ENGL 5145 - Theory (*Literary and Rhetorical Theory*)
- ENGL 5155 - Genres of Writing
- ENGL 5165 - Literacy and Technology

**Total: 15 Hours**

## **AREA REQUIREMENTS**

Students may choose to concentrate 12 hours of English graduate courses in a particular area of study that meets the student's goals in the program.

**Total: 12 Hours**

## **THESIS OR PORTFOLIO OPTIONS**

- ENGL 6950 - Master's Thesis

*Students must consult with and submit a proposal to the graduate committee for approval. (4-6 credit hours)*

**OR take**

- ENGL 6970 - Portfolio Exam  
(3 hours)

**Total: 3-6 Hours**

## **Additional Information**

**Candidate for Degree:** Graduate students must be registered for at least one credit hour during the semester that they graduate. Those who have completed all required courses and requirements may register for Candidate for Degree: CAND 5940 section 900.

**Teaching Assistantships:** Graduate students who receive a teaching assistantship must take ENGL 5913 - Practicum in Language and Rhetoric in the fall during their first semester as a teaching assistant. ENGL 5913 may also be counted as an elective.

**Independent Study:** Graduate students may only count 6 credit hours of Independent Study toward the English MA degree.

# **Environmental Sciences MS**

► Graduate School Policies and Procedures apply to this program

**Program Director:** Gregory Simon

**Office:** North Classroom

**Fax:** 303-315-7526

**E-mail:** gregory.simon@ucdenver.edu

**Web site:** MS in Environmental Sciences website

## **Core Faculty of the M.S. in Environmental Sciences Program**

### **Professors:**

Anne Chin, Geography and Environmental Science

Pamela Jansma, Geography and Environmental Science

### **Associate Professors:**

Peter Anthamatten, Geography and Environmental Science

Frederick B. Chambers, Geography and Environmental Science

Rafael Moreno-Sanchez, Geography and Environmental Science

Brian Page, Geography and Environmental Science

Gregory Simon, Geography and Environmental Science

Brian S. Wee, Geography and Environmental Science

### **Assistant Professors:**

Christy Briles, Geography and Environmental Science

Benjamin Crawford, Geography and Environmental Science

Katharine Kelsey, Geography and Environmental Science

**Senior Instructors:**

Thomas Duster, Geography and Environmental Science  
Amanda Weaver, Geography and Environmental Science

**Instructors:**

Kirsten Christensen, Geography and Environmental Science  
Matthew Cross, Geography and Environmental Science

**Lecturers:**

Richard DeGrandchamp, Geography and Environmental Science

## **Faculty Affiliates to the M.S. in Environmental Sciences Program**

**Professors:**

N. Y. Chang, Civil Engineering  
Diana F. Tomback, Integrative Biology

**Associate Professors:**

Leo P. Bruederle, Integrative Biology  
Greg Cronin, Integrative Biology  
Michael J. Green, Integrative Biology  
Timberly M. Roane, Integrative Biology  
Michael Wunder, Integrative Biology

**Assistant Professors:**

Annika Mosier, Integrative Biology  
Alan Vajda, Integrative Biology

Environmental Sciences is a multidisciplinary study of the natural/physical environment. Academic fields involved in environmental sciences include chemistry, biology and ecology, physics, geology, geography, anthropology, engineering, political science, law, economics and the health sciences. Students planning to pursue the MS in Environmental Sciences must either have earned a bachelor's degree or have taken significant course work in the natural/physical sciences or engineering and completed several other prerequisites (see the following graduate information).

Environmental careers encompass a broad range of professions, from those with a strong foundation in the natural/physical sciences or engineering to those based in the social sciences and/or humanities. Students interested in environmental issues and careers should investigate the whole field before deciding which path to follow. At CU Denver, the MS in Environmental Sciences emphasizes the natural/physical sciences and engineering with the addition of the social sciences and humanities.

The MS in Environmental Sciences degree is designed to provide training in engineering, natural/physical sciences and social sciences. The goals of the program are (1) to enhance the



interdisciplinary communication and analytical skills of the student, and (2) to provide a multidisciplinary approach for more intensive study of a particular environmental issue. Students will receive instruction in the physical and biological dynamics of various ecosystems, environmental engineering and socioeconomic issues associated with environmental analysis.

Graduates of the MS in Environmental Sciences program are involved in many different areas, such as reviewing environmental impact statements, monitoring groundwater quality and communicating with the public. Many students have found employment in various agencies (U.S. Environmental Protection Agency, U.S. Geological Survey, Colorado State Department of Public Health and Environment) and private-sector environmental and engineering firms.

## Requirements for Admission

The program is for students who either have baccalaureate degrees or have a significant background in one of the natural/physical sciences or engineering. In addition, minimum undergraduate science and math requirements are:

- one semester of calculus and one semester of upper-division statistics (*if applicant is missing the statistics course, he/she can be admitted but must take ENV5 5600, Applied Statistics, or an approved statistics course as an elective before receiving the MS in Environmental Sciences degree*)
- either two semesters of general chemistry with lab or two semesters of general biology with lab
- one semester of physics

If only two semesters of the prerequisite courses are lacking, students may be admitted, but must take them in the first year in the program. Applicants who have fulfilled all prerequisites have a better chance of acceptance. Applicants may be required to take additional prerequisite courses (necessary for completing particular core or elective courses). The prerequisite courses will not count toward the MS in environmental sciences degree. As part of the admission review process, applicants are required to submit a graduate application, a minimum of three letters of recommendation and transcripts from all institutions previously attended. CU Denver has a minimum requirement of a 3.0 undergraduate GPA for applicants to the Graduate School. The program admits new students for the fall semester only, and the number of students admitted to the program depends, in part, on space availability. **Applicants must submit all materials by the February 1st deadline.**

## Financial Aid

There are three types of financial aid available: student hourly teaching assistantship; research assistantship positions funded by grants to specific program faculty; and the regular package of financial aid (primarily loans) available through the financial aid office on the Denver campus. Incoming students will be automatically considered for program-distributed assistance at the time of admission to the program. Continuing students will be regularly apprised of available

aid and positions. All other aid should be requested through the CU Denver Financial Aid Office, Student Commons Building 5th floor, Campus Box 125, P.O. Box 173364, Denver, CO 80217-3364. Telephone: 303-315-1850.

## Internships

Students in the MS in Environmental Sciences program are strongly encouraged to contact the Experiential Learning Center for internships and paid positions related to environmental sciences. The Experiential Learning Center is located in the Tivoli Student Union, Suite 260. Telephone: 303-556-2250. Many students have had internships in federal agencies, such as the U.S. Environmental Protection Agency and the U.S. Geological Survey.

## Program Requirements

The MS in Environmental Sciences is a 39-hour program that provides students with two alternate plans: Plan I requires a thesis, while Plan II is a non-thesis program. General requirements for the program include a set of core courses (9-12 semester hours) and elective courses (24-27 semester hours minimum). Students choosing to complete the thesis option must also complete 3 hours of thesis credit, while those choosing the non-thesis option must complete 3 hours of additional elective coursework.

The degree is offered through the College of Liberal Arts and Sciences with the cooperation of the College of Engineering, Design and Computing. In addition, some courses offered by the College of Architecture and Planning, the School of Public Affairs and the Business School are relevant and applicable to the program.

## Thesis Option

Take **all** of the following:

- ENVS 6002 - Research Topics in Environmental Sciences (3 hours)
- ENVS 6100 - Research Topics in Environmental Management (3 hours)

**OR**

- GEOG 6750 - Research Design (3 hours)
- ENVS 6800 - Community-Based Research Practicum (3 hours)

Take 24 hours of elective courses

- GEOG 6950 - Master's Thesis (3 hours)

36 hours of coursework and 3 thesis hours

## Non-thesis Option

Take **all** of the following:

- GEOG 5440 - Science, Policy and the Environment
- OR**
- ENVS 6100 - Research Topics in Environmental Management (3 hours)
  - ENVS 6002 - Research Topics in Environmental Sciences (3 hours)
  - ENVS 6800 - Community-Based Research Practicum (3 hours)

Take 30 hours of elective courses

39 hours of coursework

## Elective Courses

(See the MS in Environmental Sciences website for a complete list of elective courses for the MS in Environmental Sciences program.)

Students, with the coordinator and/or an advisor, will complete a program plan that will include 24-30 semester hours of elective requirements that will meet their interests. Students may choose to use four of the electives to fulfill one of the following options offered in environmental sciences: air quality, ecosystems, environmental health, environmental science education, geospatial analysis, hazardous waste or water quality. Students must have the prerequisites for each course and must meet the requirements listed in the notes below. Contact the option advisor for the particular option of interest before starting. Upon graduation, the option will be noted on the student's transcript.

**Following are the requirements for each environmental sciences option:**

### **AIR QUALITY OPTION**

**Option Advisor:** Frederick Chambers

**E-mail:** Frederick.Chambers@ucdenver.edu

### **Required Courses**

- CHEM 5710 - Air Pollution Chemistry
- ENVS 5730 - Air Quality Modeling and Analysis

**Total: 6 Hours**

## **Electives**

Choose two:

- CHEM 5720 - Atmospheric Sampling and Analysis
- CVEN 5800 - Special Topics  
(when Air Pollution Control is the topic)
- URPL 6800 - Special Topics: Urban and Regional Planning  
(when Air Quality Planning and Policy is the topic)

**Total: 6 Hours**

**Option Total: 12 Hours**

## **ECOSYSTEMS OPTION\***

**Option Advisor:** Christy Briles

**E-mail:** Christy.Briles@ucdenver.edu

## **Required Courses**

- BIOL 5415 - Microbial Ecology
- ENVS 5010 - Landscape Biogeochemistry

**Total: 6 Hours**

## **Electives**

Choose two:

- ENVS 5731 - Mountain Biogeography
- ENVS 6220 - Toxicology (see Note 2)
- BIOL 5050 - Advanced Biology Topics  
(when Seminar in Aquatic Ecology is the topic)
- BIOL 5154 - Conservation Biology
- GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing

**Total: 6 Hours**

**Option Total: 12 Hours**

\* BIOL 5445, Applied Environmental Biology, is required as a prerequisite for the ecosystems option.

## **ENVIRONMENTAL HEALTH OPTION\***

**Option Advisor:** Peter Anthamatten

**E-mail:** Peter.Anthamatten@ucdenver.edu

### **Required Courses**

- ENVS 6220 - Toxicology (See Note 2)  
(fall, even years)
- ENVS 6230 - Environmental Epidemiology  
(spring, even years)

**Total: 6 Hours**

### **Electives**

Choose two:

- ENVS 5500 - Topics in Environmental Sciences (when Ecological Risk Assessment is the topic)  
(See Note 2)
- ENVS 6210 - Human Health and Environmental Pollution  
(spring, odd years)
- GEOG 5710 - Disasters, Climate Change, and Health

**Total: 6 Hours**

**Option Total: 12 Hours**

\* ENVS 6200, Risk Assessment, is required as a prerequisite for the environmental health option.

## **ENVIRONMENTAL SCIENCE EDUCATION OPTION**

**Option Advisor:** Bryan Wee

**E-mail:** bryan.wee@ucdenver.edu

### **Required Courses**

- ENVS 5340 - Equity & Culture in Science Education: Local/Global
- ENVS 5650 - Environmental Education

**Total: 6 Hours**

## **Electives**

Choose two:

- ANTH 5170 - Culture and the Environment
- BIOL 5154 - Conservation Biology
- COMM 5282 - Environmental Communication
- ENVS 5020 - Earth Environments and Human Impacts
- ENVS 5470 - Sustainable Urban Agriculture Field Study II
- GEOG 5265 - Sustainability in Resources Management
- GEOG 5335 - Contemporary Environmental Issues
- GEOG 5440 - Science, Policy and the Environment

**Total: 6 Hours**

**Option Total: 12 Hours**

## **GEOSPATIAL ANALYSIS OPTION\***

**Option Advisor:** Rafael Moreno

**E-mail:** Rafael.Moreno@ucdenver.edu

## **Required Courses**

- GEOG 5080 - Introduction to GIS
- GEOG 5090 - Environmental Modeling with Geographic Information Systems

**Total: 6 Hours**

## **Electives**

Choose two:

- GEOG 5050 - Applied Spatial Statistics
- GEOG 5086 - FOSS4G Systems Integration
- GEOG 5091 - Open Source Software for Geospatial Applications
- GEOG 5092 - GIS Programming and Automation

- CVEN 5382 - Geospatial Data Development
- CVEN 5385 - GIS Relational Database Systems

**Total: 6 Hours**

**Option Total: 12 Hours**

\* GEOG 3080, Introduction to Mapping and Map Analysis, is required as a prerequisite of the geospatial analysis option.

## **SUSTAINABLE URBAN AGRICULTURE OPTION**

**Option Advisor:** Amanda Weaver

**E-mail:** [amanda.weaver@ucdenver.edu](mailto:amanda.weaver@ucdenver.edu)

### **Required Courses**

- ENVS 5450 - Urban Food and Agriculture: Perspectives and Research
- ENVS 5460 - Sustainable Urban Agriculture Field Study I

**Total: 6 Hours**

### **Electives**

Choose two:

- ENVS 5340 - Equity & Culture in Science Education: Local/Global
- ENVS 5470 - Sustainable Urban Agriculture Field Study II
- GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing
- GEOG 5085 - GIS Applications for the Urban Environment
- GEOG 5235 - GIS Applications in the Health Sciences
- GEOG 5640 - Urban Geography: Denver and the U.S.
- GEOG 5680 - Urban Sustainability: Perspectives and Practice

**Total: 6 Hours**

**Option Total: 12 Hours**

## **WATER SYSTEMS OPTION\***

**Option Advisor:** Anne Chin

**E-mail:** [anne.chin@ucdenver.edu](mailto:anne.chin@ucdenver.edu)

## Required Courses

- ENVS 5280 - Environmental Hydrology  
and
- CVEN 5334 - Groundwater Hydrology OR
- CVEN 5335 - Vadose Zone Hydrology

**Total: 6 Hours**

## Electives

Choose two:

- BIOL 5416 - Aquatic Ecology
- ENVS 5410 - Aquatic Chemistry
- CVEN 5333 - Surface Water Hydrology
- CVEN 5336 - Urban Runoff Quality and Quantity Modeling
- CVEN 5393 - Water Resources Development and Management

**Total: 6 Hours**

## Option Total: 12 Hours

\*CHEM 5700, Environmental Chemistry, or appropriate chemistry background is required as a prerequisite of the water quality option.

## Notes:

1. Many of the elective courses have prerequisites; student must have met these requirements in order to take the course.
2. One course may not be used for more than one option, even if it is listed in several options. Other courses may be offered that will be acceptable as electives with approval of the option advisor and the director of the program.
3. Courses applied to either a certificate\* or an MS degree may later be applied toward the other if all pertinent coursework is completed within a five year time period.
4. Students should fill out and submit all relevant department forms for their files. Importantly, all petitions for course substitutions and identification of where courses fit as electives, with the subsequent approval/denial, should be submitted to this file.
5. By the end of the first semester, each student should identify and declare whether or not s/he is pursuing the thesis or non-thesis option. If intending to pursue the thesis



option, the student should identify and gain agreement from a content advisor for guiding the thesis, filling out and submitting the appropriate departmental form.

6. Many of the electives have pre-requisites; students must have met these requirements in order to take the course.
7. Students may transfer up to 9 hours of approved graduate-level credit into the program. These courses must be approved by the Graduate Director and they may not replace core courses
8. Students may count up to 6-credit hours of independent, with a maximum of 3-credit hours per independent study towards elective credit in the major as approved by the Graduate Director. No more than 3 credit hours of independent study may be taken with the same instructor and they may not be taken in the same term.
9. Students may count up to 6-credit hours of internship in total, but 3-credit hours per internship and per entity (sponsorship may be with same professor sponsor)
10. Students may not count 4000-level courses towards electives in the program; this may be petitioned to the Graduate Committee in exceptional cases.
11. Students may take a maximum of 2 online courses, or petition to the GES Graduate Committee beyond two.
12. Students may enroll in thesis preparation and writing hours only after submission of signed committee form, which requires approval of the thesis proposal.
13. Students will not receive a grade for thesis preparation and writing hours until the thesis is successfully defended.
14. Students must follow the graduate school deadlines for submission of paperwork for the graduation application, comprehensive exam, and any other deadlines. Links to these can be found on the GES/MS website.
15. Work submitted for the environmental sciences options must have a grade of *B* (3.0) or better.

\* The Geospatial, Environmental Education, and Urban Agriculture options of the program lead towards independent graduate certificates. These certificates may be earned without entrance into the MS in environmental sciences program. (See the Geographic Information Science Graduate Certificate , Sustainable Urban Agriculture Graduate Certificate, and Environmental Science Education Graduate Certificate descriptions.)

## **Executive MBA in Health Administration**

### **Distinctive Features of the Executive Program in Health Administration**

1. Drawing on the expertise represented by the faculties of a consortium of western universities, the program offers high-quality courses taught by instructors that are typically not available from a single university.
2. The executive program facilitates learning for professionals who have continuing career and family responsibilities. The program is especially tailored for working individuals, allowing students to remain on their jobs while completing their educational program.
3. The program employs innovation in the technology of educational delivery. Learning methods include:
  - computer-assisted instruction and self-paced learning packages
  - computer conferencing and electronic case analyses
  - on-campus sessions

**For application and additional information, contact:**

Executive Program in Health Administration  
The Business School  
University of Colorado Denver  
1475 Lawrence Street  
Denver, CO 80202  
(303) 623-1888

[Business.ucdenver.edu/ExecutiveHealth](http://Business.ucdenver.edu/ExecutiveHealth)

## Finance and Risk Management MS

**Program Director:** Jian Yang  
**Email:** [Jian.Yang@ucdenver.edu](mailto:Jian.Yang@ucdenver.edu)  
**Telephone:** 303.315.8423

The master of science in finance and risk management provides the necessary depth and specialized expertise to meet the needs of businesses for financial managers, investment analysts and other finance specialists.

The program emphasizes a familiarity with the institutions in our financial system, an understanding of financial markets and instruments, and the analytical skills and tools necessary to make informed decisions about investment and financing.

The program is suited to students from a wide variety of undergraduate backgrounds and is particularly appropriate to students with strong technical and analytical backgrounds. Admission standards for the MS finance and risk management program are unique to the program. Therefore, admission to other graduate business programs does not guarantee admission into the MS finance and risk management program.

The MS in finance and risk management offers flexibility with on-campus and online courses. The MS finance and risk management degree requirements are met by the following courses and options:

## **Prerequisites**

Prerequisites: BUSN 6550, Analyzing and Interpreting Accounting Information, or the equivalent of a financial accounting course taken within the last ten years with a "B-" grade or higher. Students are also expected to be knowledgeable in spreadsheet software.

## **Finance and Risk Management Core: (18 hours)**

- FNCE 6290 - Quantitative Methods for Finance
- BUSN 6620 - Applied Economics for Managers
- BUSN 6640 - Financial Management
- FNCE 6300 - Macroeconomics and Financial Markets
- FNCE 6330 - Investment Management Analysis
- FNCE 6382 - Survey of Financial Derivatives

## **Specializations: (12 hours)**

Students must complete one of the following specializations:

### **Commodities Specialization**

Required Courses:

- CMDT 6582 - Commodity Supply Chain Management
- CMDT 6682 - Commodity Valuation and Investment
- CMDT 6802 - Foundations of Commodities

Complete one of the following courses:

- CMDT 6782 - Commodity Data Analysis
- ECON 5823 - Econometrics II
- FNCE 6360 - Management of Financial Institutions
- FNCE 6370 - International Financial Management
- FNCE 6460 - Emerging Market Finance
- FNCE 6480 - Financial Modeling
- MATH 5792 - Probabilistic Modeling
- RISK 6129 - Practical Enterprise Risk Management
- RISK 6509 - Global Risk Management
- RISK 6809 - Principles of Risk Management & Insurance

- RISK 6909 - Corporate Risk Management

## **Economics Specialization**

### **Finance and Risk Management Core (9 hours)**

- BUSN 6640 - Financial Management
- FNCE 6330 - Investment Management Analysis
- FNCE 6382 - Survey of Financial Derivatives

### **Finance and Risk Management Electives (6 hours)**

Select any two FNCE/RISK/CMDT courses numbered 6000 or higher (excluding FNCE 6290 and FNCE 6300).

### **Economics Core (12 hours)**

- ECON 5073 - Microeconomic Theory
- ECON 5083 - Macroeconomic Theory
- ECON 5803 - Mathematical Economics
- ECON 5813 - Econometrics I

### **Quantitative Elective (3 hours)**

Select one of the following courses:

- ECON 5823 - Econometrics II
- ECON 6801 - Advanced Mathematical Economics
- MATH 5351 - Actuarial Models
- MATH 5390 - Game Theory
- MATH 5792 - Probabilistic Modeling

**The Economics Specialization is a stand alone program which requires 30 credit hours**

## **Finance Specialization**

Students must select at least 3 courses with **FNCE/CMDT/RISK** prefix, numbered 6000 or higher. Remaining Finance Elective may be any of the following courses: **FNCE/CMDT/RISK** course numbered 6000 or higher, **ACCT 6140** Tax Planning for Managers, **ACCT 6340** Financial Statement Analysis, **ENTP 6824** Entrepreneurial Financial Management, **ECON 5813** Econometrics I, **ECON 5823** Econometrics II, **MATH 5792** Probabilistic Modeling, or **MATH 5390** Game Theory.

## **Financial Analysis and Management Specialization**

Select three or four of the following courses:

- FNCE 6310 - Financial Decisions and Policies
- FNCE 6340 - Business Firm Valuation
- FNCE 6360 - Management of Financial Institutions
- FNCE 6411 - International Corporate Governance
- FNCE 6420 - Mergers and Acquisitions
- FNCE 6450 - Short-Term Financial Management
- FNCE 6460 - Emerging Market Finance
- FNCE 6480 - Financial Modeling

**If 3 courses completed from list above, select 1 course from the list below:**

- ACCT 6140 - Fundamentals of Federal Income Tax
- ACCT 6340 - Financial Statement Analysis
- CMDT 6582 - Commodity Supply Chain Management
- CMDT 6682 - Commodity Valuation and Investment
- CMDT 6802 - Foundations of Commodities
- ENTP 6824 - Entrepreneurial Financial Management
- MATH 5390 - Game Theory
- RISK 6129 - Practical Enterprise Risk Management
- RISK 6509 - Global Risk Management
- RISK 6809 - Principles of Risk Management & Insurance
- RISK 6909 - Corporate Risk Management
- CMDT 6782 - Commodity Data Analysis

## **Risk Management and Insurance Specialization**

### **Required Courses:**

- RISK 6129 - Practical Enterprise Risk Management
- RISK 6809 - Principles of Risk Management & Insurance
- RISK 6909 - Corporate Risk Management

### **Quantitative Elective**

Select 1 of the following:

- CMDT 6582 - Commodity Supply Chain Management
- CMDT 6682 - Commodity Valuation and Investment
- CMDT 6782 - Commodity Data Analysis
- CMDT 6802 - Foundations of Commodities
- ECON 5823 - Econometrics II
- ENTP 6824 - Entrepreneurial Financial Management
- FNCE 6340 - Business Firm Valuation
- FNCE 6360 - Management of Financial Institutions

- FNCE 6411 - International Corporate Governance
- FNCE 6420 - Mergers and Acquisitions
- FNCE 6480 - Financial Modeling
- MATH 5792 - Probabilistic Modeling
- RISK 6209 - Cyber Risk Management
- RISK 6309 - Strategic Risk Management
- RISK 6409 - Employee Benefits and Workforce Risk Management
- RISK 6509 - Global Risk Management

There may be additional prerequisite courses for the ECON and/or MATH selections. Please check with those departments or the graduate advisors.

**Total 30 credit hours**

## **Global Energy Management MS**

**Program Advisor:** Michele Cooper

**Telephone:** 303-315-8066

**E-mail:** michele.cooper@ucdenver.edu

### **Faculty**

#### **Professors/Instructors**

John Burkholder, MSSM

Andy Bertsch, D.B.A.

Jenny Bredt, MS

Ralph Cantafio, J.D., MS

Janie M. Chermak, Ph.D.

Jill Engel-Cox, Ph.D.

Jamie Ferguson, M.S.

Chris Hansen, Ph.D.

Gary Hapken, CPA, MBA

Maen M. Husein, Ph.D.

Jack Mason, Ph.D.

Brent Mattson, Ph.D.

Michael J. Orlando, Ph.D.

Johanna Schmidtke, Ph.D.

Steven Seay, Ph.D.

Melissa Wood, MBA

The master of science in global energy management (GEM) prepares individuals for leadership careers in the energy industry. This degree is particularly appropriate for individuals seeking to advance their existing careers in the energy field. Prior work experience within the field is preferred, but not required. The program consists of two components: the core curriculum and the more advanced and specialized elective courses. The MS GEM program requires the completion of the following core classes as well as four elective courses from the selection listed below.

## Required Courses

- GEMM 6000 - 21st Century Global Energy Issues and Realities
- GEMM 6100 - Global Energy Economics
- GEMM 6200 - Environmental, Regulatory, Legal & Political Environment in the Energy Industry
- GEMM 6300 - Technical Aspects of Energy Science
- GEMM 6400 - Leadership and Decision Making in the Global Energy Environment
- GEMM 6410 - People Management in the Global Energy Environment
- GEMM 6450 - Strategic Management of the Energy Industry
- GEMM 6500 - Energy Accounting in the Global Markets
- GEMM 6600 - Introduction To Financial Management In The Energy Industry

## Choose three

Choose three of the following courses. These courses are taken during the last two terms of the program and are offered based on enrollment.

- GEMM 6210 - Energy and the Law: Property and Contracts
- GEMM 6230 - Political Risk Management for Global Energy Environmen
- GEMM 6430 - Organizational Behavior in the Energy Industry
- GEMM 6470 - Energy Marketing and Communications
- GEMM 6610 - Advanced Financial Management in the Energy Industry
- GEMM 6620 - Energy Asset & Production Management for the Energy Industry
- GEMM 6630 - Commercialization Management of Renewable Energies

## Notes and Restrictions

The program is a cohort group, hybrid online, 18-month master of science degree program. As a cohort program, all students start together, progress together and graduate together. It is not recommended for students to take time out of the program once it starts, and students should plan on remaining in the program for the full 18 months. If it becomes necessary to take a term off, students need to contact the program advisor to discuss options. As a hybrid online program, professors and students meet in class face to face for four days (Fridays through Mondays) at the start of each 3-month term with the rest of the term completed online. Please note that the GEM degree program runs on a completely separate schedule from the normal semester terms of the Business School. Please check the Business School Website for deadlines and dates of each GEM term. All GEMM courses are restricted to those students who have been admitted to the MS GEM program.

## Dual Degrees

In order to participate in the dual degree options offered by the Business School, students in the GEM program must first complete their entire GEM degree before they can begin their second degree.

# Health Administration MS

**Program Director:** Rulon Stacey

**Telephone:** 303-315-8851

**E-mail:** Rulon.Stacey@ucdenver.edu

The goal of the master of science in health administration degree is to prepare students, who, after appropriate practical experience in responsible managerial positions, are capable of assuming positions as chief executive officers or senior administrators in complex, multi-service healthcare organizations or in organizations' purchasing health services.

The curriculum is a synthesis of management concepts and techniques that are applicable to any economic organization and tools that can be specifically applied to health and health services systems. The program emphasizes skills that heighten basic analytical and decision-making processes used by top-level managers in selecting broad strategies for the institutions and by junior managers in administering subunits of health care organizations. The faculty guide the students in their mastery of theoretical, conceptual and quantitative topics.

The program has enjoyed continuous accreditation by the Commission on Accreditation of Healthcare Management Education since 1970.

## A. Common Body of Knowledge (CBK): (18 hours)



Advisor will evaluate transcript for possible waivers in the CBK.

- BUSN 6521 - Leading Individuals and Teams
- BUSN 6530 - Data Analytics for Managers
- BUSN 6550 - Analyzing and Interpreting Accounting Information
- BUSN 6630 - Management of Operations
- BUSN 6640 - Financial Management

## **B. Health Administration Core: ( 21 hours)**

- BUSN 6541 - Legal and Ethical Environment of Business (Health Section)
- BUSN 6561 - Marketing Management (Health Section) This course has a new title: Marketing Dynamics in the 21st Century (Health Section).
- BUSN 6621 - Applied Economics for Managers (Health Section)
- BUSN 6711 - Strategic Management (Health Section) \*This course is intended to be taken in your last Spring semester.
- HLTH 6010 - Health Care Systems
- HLTH 6770 - Healthcare Quality and Outcomes
- HLTH 6911 - Health Field Studies \*This course is intended to be taken in your last Spring semester. Pre-req: HLTH 6010 or consent of instructor, minimum 3.0 cumulative GPA.

## **C. Health Administration Information Technology Elective: (3 hours)**

Select one of the following courses:

- HLTH 6071 - Introduction To Health Information Technology
  - HLTH 6072 - Management of Healthcare Information Technology
- Please note: 2nd Health Administration Information Technology course may be used as Health Administration elective

## **D. Health Administration Electives: (6 hours)**

Select two of the following courses:

- ENTP 6801 - Building Biotechnology
- ENTP 6848 - Leadership in New Ventures
- HLTH 6740 - Profiles in Health Care
- HLTH 6070 - International Health Policy and Management
- HLTH 6075 - International Health Travel Study

- ISMG 6810 - Business Intelligence in Healthcare
    - \* Students can also select HLTH 6071 or HLTH 6072 if not used as a Health Administration Information Technology Elective.
- A new Health course has been added for spring of 2020 and may also be selected. HLTH 6730, Healthcare Operations Management.

## Notes and Restrictions

*Administrative Residency or Fellowship.* An administrative residency or fellowship is optional but recommended for students with limited healthcare experience. The program faculty provide guidance to students applying for residencies or fellowships. Information on the full range of local, regional, and national residencies or fellowships is available from the program director.

*Length of program.* A maximum of five years and one semester is allowed to complete the Health Administration program.

# Health Economics MS

► Graduate School Policies and Procedures apply to this program

**Program Director:** Brian Duncan, Ph.D.

**Graduate Advisor:** Daniel Rees, Ph.D.

The M.S. program in Health Economics provides graduate-level training in economics, specifically in the economics of the health care industry. Our M.S. program emphasizes extensive training in mathematical and quantitative analysis, including substantial exposure to applied econometrics, working with large and diverse data sets, and a wide range of statistical software. The M.S. in Health Economics builds off the strengths of the Economics Department, which is housed in the College of Liberal Arts and Sciences, and the Department of Health Systems, Management and Policy (HSMP), which is housed in the Colorado School of Public Health, allowing students to take courses on both the downtown Denver and Anschutz Medical campuses. The program gives students the applied skills that employers demand, provides those pursuing advanced degrees an edge in gaining admission to top-flight Ph.D. programs, enhancing the student's career and professional development.

## Admission Requirements

- Meet all general admission requirements of the Graduate School (including a 3.0 undergraduate grade-point average).
- Submit three letters of recommendation (at least two letters should come from individuals who are familiar with your scholarly record. The third can be an additional

academic reference or professional reference from someone who knows you well and can comment on your potential as a graduate student).

- Submit official transcripts from all colleges attended.
- Have completed 15 credit hours of undergraduate economics, including intermediate microeconomic theory and econometrics (upper division courses).
- Have completed courses in calculus and statistics (preferably a year of calculus. A course in linear algebra and/or differential equations is recommended).
- Submit GRE scores. All applicants, international and domestic, must submit GRE scores regardless of prior degrees, course work, or work experience. The institution code for CU Denver is 4875. GRE scores are used in conjunction with other indicators of academic success at the Master's level. Applicants must show strong evidence of quantitative ability either through high grades in math, statistics, and economics courses, a high quant score on the GRE, or preferably both.
- International students must submit TOEFL, IELTS, or PTE Academic scores. The institution code for CU Denver is 4875. The minimum required score is 203 (computer-based TOEFL), 75 (IBT-based TOEFL), 537 (paper-based TOEFL), 6.5 (IELTS), or 51 (PTE). Minimum subscores also apply. More information about TOEFL, IELTS, or PTE waiver requirements can be found on the International Admission's website. Please contact the International Admissions office if you have questions about this requirement.

### **Application Deadlines:**

**Fall: June 1 Spring: December 1**

The Department of Economics accepts late applications after these official deadlines. However, there is no guarantee that a late application will be processed in time for the start of the semester. Students are encouraged to apply well in advance the application deadline.

International students who apply after the June 1 or December 1 deadline may not have time to obtain a student visa. Being admitted to the M.S. program in Health Economics does not guarantee that a student will receive a student visa in time for the start of the semester. International students who are admitted to the MS program, but fail to obtain a visa in time, may defer admission for up to one year. All questions about student visas should be directed to the Office of International Education.

### **Degree Requirements**

1. Students must complete a minimum of 30 credit hours of coursework, of which 21 hours are core requirements. Each student's plan will be worked out in conjunction with the graduate advisor. Students are expected to meet all course prerequisites.
2. Students must complete a minimum of 30 graduate (5000 and above) level credit hours.

3. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail. No course may be taken more than twice and only one attempt will retain the credit.
4. Students must complete all credits for the degree with CU Denver/CU Anschutz faculty.

## **Core Courses**

- ECON 5073 - Microeconomic Theory
- ECON 5803 - Mathematical Economics
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II
- ECON 7073 - Advanced Microeconomic Theory II
- ECON 7661 - Health Economics I
- ECON 7662 - Health Economics II

**Total: 21 Credits**

## **Electives**

Three courses numbered 5000 or higher with an ECON or HSMP subject code. Courses numbered 6611 or higher with a BIOS subject code may be taken with the graduate advisor's approval.

**Total: 9 Credits**

**Degree Total: 30 Credits**

## **Graduate Examination**

Students must successfully complete a capstone project in which proficiency in the knowledge and skills comprising the MS degree in Health Economics is demonstrated.

# **Historic Preservation MS**

►Graduate School Rules apply to this program

**Program Director:** Steve Turner

**Office:** CU Denver Building, 2<sup>nd</sup> Floor

**Telephone:** 303-315-1000

**E-mail:** [steve.turner@ucdenver.edu](mailto:steve.turner@ucdenver.edu)

The Master of Science in Historic Preservation (MS HP) is a 45 semester-hour program, usually completed in 15 or 18 months (three regular semesters and possibly part or all of one summer). It is designed to accommodate the background and needs of both those students with substantial experience and those new to the field. The course of study is for students seeking training in spatial, technical and design aspects of the broader field; it encompasses architecture, cultural landscapes, preservation, planning, building technology, project management, documentation, interpretation and representation.

In a rapidly changing cultural, economic and professional environment, it is valuable to have an understanding of what is worth saving of the built environment. However, appreciation for the past alone is insufficient for making the informed and creative decisions expected and required of cutting-edge professionals. The practice of historic preservation is very different today than it was when graduate programs first were developing some 40 years ago. The CU Denver MS HP is among a new generation of studies that looks to historical resources as they relate to a more desirable future.

As global economies change fewer resources are available for new buildings and we must adaptively reuse our existing structures. This trend will continue beyond short-term economic conditions, because it will always be a more sustainable practice to reuse existing buildings than to tear them down and harvest or manufacture new materials.

The College of Architecture and Planning, and the professional community that it serves, foresee a significant and permanent shift towards more adaptive reuse of existing buildings. The Master of Science in Historic Preservation is a program designed to prepare students for a true 21st Century career.

Historic preservationists come from a variety of backgrounds. Some are well-educated in the humanities and desire to increase their technical understanding. Those familiar with the social sciences might be seeking "real world" applications for their expertise. Many already with "first professional degrees" in design and planning disciplines, as well as the law and business, seek to deepen their competence in the vibrant and interesting professional niche of historic preservation.

## **Prerequisites**

The Master of Science in Historic Preservation program is fully integrated into a college emphasizing design and graphic excellence. While HP students need not have fully developed skills in advance of matriculation we have found that some students have benefited from some previous exposure to basic graphic skills. Elective courses in the College of Architecture and Planning may also be used to develop these skills.

## **Admissions**

Application to the Master of Science in Historic Preservation program is open to all students holding the bachelor's (undergraduate) degree from an accredited college (or its equivalent from a foreign institution).

## Materials Required

- A brief statement of interest (500 word max.)
- A compact sample of work (max. 15 pages 8.5" X 11") of writing samples, and optionally, graphic work and professional resume is recommended.
- Submission of Graduate Record Exam (GRE) scores is optional. [There is an expedited application procedure for current CU Denver students in another CAP master's program. Please inquire to the MS in Historic Preservation program director.]

## Transfer Credit

Transfer credit of up to 12 semester hours (up to 15 semester hours for those seeking/holding a related master's degree from CU Denver) may be awarded for equivalent graduate (post-bachelor's) course work at the discretion of the program director and in keeping with CU Denver Graduate School rules. Students holding a master's degree in Architecture, Urban Planning or Landscape Architecture are typically awarded 12 to 15 semester hours of advanced standing. Additional advanced standing may be considered in accordance with the rules of the Graduate School.

## Undergraduate Course Work

Undergraduate course work substantively equivalent to a MS HP required course may be accepted as a substitution for that course at the program director's discretion, but such substitution will not reduce the total number of semester hours required for the degree.

## Program Requirements

The course of study is designed to accommodate the background and needs of both those students with substantial experience, and those new to the field. The curriculum is flexible but rigorous, requiring:

- 15 semester hours of core courses in preservation
- 6 semester hours in approved Design History courses
- 15 semester hours of electives
- 9 semester hours capstone requirement

Students enrolling full-time in the 45 semester hour curriculum typically complete the program in three or four semesters, or 18 months. However, course work other than the completion of

the capstone requirement may be accomplished in a period of residency as short as 15 months. Students receiving significant transfer credit and those with a related degree may further reduce the time required for the MS degree in Historic Preservation.

Our program is compliant with National Council of Preservation Education Standards.

## Required Core Courses

Core Preservation courses (choose at least 5):

- HIPR 6010 - Preservation Theory and Practice
- HIPR 6210 - Historic Buildings in Context
- HIPR 6220 - Adaptive Reuse: Business and Practice
- HIPR 6310 - Documentation, Analysis, Representation
- HIPR 6410 - Urban Conservation: Context for Reuse
- HIPR 6510 - Building Conservation
- HIST 5232 - Historic Preservation

Choose at least 2 approved Design History courses (offerings vary). Some examples are:

- HIPR 6110 - Regionalisms & the Vernacular
- HIPR 6610 - Reading the City
- LDAR 5521 - History of Landscape Architecture
- URPL 6350 - Form and Formation of Cities
- Several other CAP and History Department courses may also qualify.

**Total: 21 Hours**

## Electives

Up to 15 elective semester hours.

**Total: 15 Hours**

## Capstone Work

Choose either 1. Professional Project or 2. Thesis.

1. HIPR 6851 - Professional Project (3 semester hours)  
Preceded by 6 credits from the following:
  - HIPR 6930 Internship
  - Pre-approved travel education

- Pre-approved related elective

2. HIPR 6951 - Thesis (6 semester hours)

Preceded by LDAR 6949 - Research Tools & Methods (3 semester hours)

**Total: 9 hours**

## History MA

► Graduate School Policies and Procedures apply to this program

The master of arts in history requires 36 semester hours (12 courses). Students applying for admission to the program should have some background in history, though not necessarily a BA in the subject. The department encourages applications from individuals of any age interested in continuing or resuming their education. Graduate students in history develop skills in critical thinking, writing and independent research. Our program prepares students for a wide variety of professions, including teaching, government service, museum and archive management, and historic preservation, as well as further degree work in history, law, librarianship and business. The department expects that students graduating with an MA in history will master the following general skills for their degrees:

- The ability to pursue independent historical research projects
- The ability to analyze historiographical arguments
- The ability to analyze primary documents and develop arguments from them
- The ability to create bibliographies using archival, library, and Internet resources
- The ability to write in a variety of formats, including historiographical essays, book reviews, and research papers

Students will also master knowledge of the basic historical content of both their major and minor fields, and an understanding of the historiographies and historical methods in their major and minor fields.

### Admission Requirements

- In addition to the general admission requirements of the Graduate School, the Department of History requires an undergraduate GPA of at least 3.25.
- Applicants are required to submit a sample of written work, usually a term paper or project of similar length.
- All applications must include three letters of recommendation, preferably from college or university faculty.



- Applicants should address any gaps, weaknesses, or special circumstances in their academic records in the statement of purpose portion of the application. In special circumstances, the department may modify its admission standards.

## **APPLICATION DEADLINES**

**March 15**                      **Fall admission**  
**October 15**                   **Spring admission**

Admission decisions are made by a graduate committee composed of the graduate advisor and faculty representing fields in U.S., European, global, and public history.

## **Graduate School Policies**

All history MA students are subject to Graduate School policies related to graduate study, as well as to all relevant university policies. These policies cover such topics as time limits on degree completion, changing degree programs, incomplete grades, and more. Further information on these policies can be found in the Graduate School section of this online catalog.

## **Transfer Credits**

With approval from the graduate advisor and the appropriate faculty, students may transfer up to nine graduate-level credits accrued before enrollment in the CU Denver MA history degree program, provided that they earned a grade of *B+* or better in these courses. Students must submit a syllabus for each course they wish to transfer, and faculty may require students to complete additional assignments to meet the expectations of the department. The department will not accept transfer of courses comparable to HIST 6013, Introduction to the Professional Study of History.

## **Grade Requirements**

The history department requires that graduate students maintain a cumulative GPA of 3.0 and will not accept grades lower than *B-* (2.7) toward the completion of course work for the master's degree. Students who earn less than a *B-* in HIST 6013 must retake the class.

## **Residency Requirements**

The history department requires a residency of at least one academic year for the degree.

## **Graduate Advising**

Early in their first semester, students should contact the history department graduate advisor to discuss their path through the program and to receive advice regarding the selection of major and minor fields.

## **Degree Tracking Responsibility**

Although faculty will provide reasonable guidance, it is up to students to monitor their own progress through the program in consultation with the graduate advisor and their major and minor advisors; this includes knowledge and understanding of application and graduate deadlines, degree requirements, comprehensive exam expectations and processes, thesis guidelines, etc.

## **Choosing Advisors and Fields of Study**

All history MA candidates choose a major field and a minor field. Students will take courses in these fields and will be tested in these fields. After consulting with the graduate advisor, students are responsible for securing two field advisors, one to oversee their progress in the major field, the other to oversee their minor field. All students should have chosen their fields and advisors by the end of the semester in which they have complete 12 credit hours. Students will also need a third advisor for the comprehensive examinations. This third advisor is typically in their major field and students should always consult with them during preparation for the examinations.

## **Major Fields, Minor Fields, and Concentrations**

The MA in history seeks to provide students with a balance of breadth and depth in the study of history. Major fields are broad areas of study within which students gain a general picture of historical processes. Concentrations provide focus for developing expertise within the major, either regionally or thematically. Minor fields provide a complementary or comparative area and must sit outside the major field.

Advisors and students together will work out Plans of Study, which indicate the courses students intend to take to meet their requirements, based on their selection of major and minor fields. *Students should make every effort to enroll in courses that best fit their major field, major concentration and minor field.*

The department has core readings for the Public History and US History fields. Students will draw on these readings for their comprehensive exams. Students working in all fields will coordinate their readings with their major and minor advisors.

### **Major Field Concentrations**

Students work with advisors to select one of the major field concentrations listed below. Concentrations provide thematic or regional focus to a broad geographical or methodological major (e.g. for the global history major, students could concentrate on trade, borders,

imperialism, etc.. or any of the areas of regional expertise of our faculty). Readings for the major field concentration are in addition to the core reading list. Note that students may select their concentrations and the options for minors from the same lists, below.

### **Minor Fields**

Students can define their minor field as a specialization within one of the four major fields or as topics from the list of concentrations. Note that students may select their concentrations and the options for minors from the same lists, below.

**Students must select their major and minor fields from any two of the following three groups. (Students may not select their major and minor fields from the same group).**

### **Group 1: Geographical Concentrations**

- East Asia
- Latin America
  - Mexico
  - South America
- Middle East
- Europe
  - Germany
  - France
  - Britain
  - The Mediterranean
- United States
  - Colonial and Early Republic
  - Nineteenth Century
  - U.S. West
  - Twentieth Century
  - U.S. Foreign Policy
  - Colorado
- Global
  - Atlantic World
  - Pacific World

### **Group 2: Thematic Concentrations**

- Colonialism and Imperialism
- Cultural History
- Social History

- Foreign Policy
- Economic and Business History
- Environmental History
- Gender and Sexuality
- Citizenship and National Identity
- War, Revolution and Genocide
- Globalization
- Urban History
- Frontiers and Borderlands
- Race and Ethnicity
- Science, Medicine, and Society
- Intellectual History
- Material Culture
- Migration and Immigration
- Policing and Legal History
- Indigenous Histories

### **Group 3: Public History**

- Memory and Community
- Museum Studies
- Historic Preservation

Note: *Majors in Public History must follow the Plan of Study for Public History.*

## **Degree Requirements**

All history MA students must have a major field and a minor field, and they must complete half of their course work at the 6000 level.

### **Required Introductory Course**

- HIST 6013 - Introduction to the Professional Study of History

**Total: 3 Hours**

### **Major Field**

**Core Course in Major Field (3-6 semester hours)**

Public history and U.S. history major fields require core courses covering major approaches and themes. The core courses familiarize students with the field in a broad sense.

### **Research Seminars (3-6 semester hours)**

Research seminars focus on students' development of an original, primary research paper. One 3-semester-hour research seminar is required of all students. A second research seminar is required for students not in public history; the second 3 semester hours can be taken within the major or minor field.

### **Major Electives (9-12 semester hours)**

Major electives are made up of courses in the major and concentration, including readings courses, that address specific field historiographies, and optional extended research credits. Students who choose to do a thesis may apply 6 thesis semester hours (HIST 6950) toward the major electives requirement.

**Total: 18 Hours**

### **Minor Field**

#### **Minor Electives**

Minor electives are made up of courses in the minor field, including readings courses, which address specific field historiographies, or research seminars.

**Total: 12 Semester Hours**

### **Open Elective**

Students may use the open elective to explore a course outside their major or minor or to do extra course work in one of their fields.

**Total: 3 Hours**

### **Degree Total: 36 Hours**

#### **INDEPENDENT STUDY AND/OR INTERNSHIP**

Candidates may register for up to 6 hours of internships or independent study, only one of which may be at the 6000-level. Students will not be allowed to fulfill the research seminar requirement with an independent study or internship. Any independent study or internship at the 6000-level needs the permission of the graduate advisor. Students interested in pursuing an independent study or internship must find a faculty member willing to oversee their work, and they should expect the workload to equal or exceed that required for other courses at the same level.

- HIST 5840 - Independent Study: History
- HIST 6840 - Independent Study: HIST
- HIST 6939 - Internship

## **COMPREHENSIVE EXAMINATIONS**

All history MA candidates must pass a comprehensive examination in the major and minor fields after the completion of course work and generally before embarking on a thesis, curriculum project or public history project. The comprehensive exam evaluates students' knowledge of their course work and their reading lists for their major, minor and concentration. The exam consists of a take-home written section, with broad essay questions in both the major and minor fields; this is followed by an oral exam with the student's faculty committee. In answering their exam questions, students are expected to construct arguments and to show mastery of the historiographies, narratives and historical content in their fields. The comprehensive exam is administered and evaluated by a committee of the major advisor, the minor advisor and an outside reader from the history faculty. Students should expect to read 80-100 books combined, as well as significant articles, in their major and minor fields. When appropriate, students may enroll in HIST 6940, Comprehensive Examination, a one-credit requirement connected to faculty commitment to preparing students for their examination.

- HIST 6940 - Comprehensive Exam

## **Master's Degree Extended Research Options**

The MA program in history offers a set of courses in which students can develop extended research interests. Students must select an advisor and develop a proposal for a specific research agenda in the semester before beginning work on a project.

### **REQUIRED PUBLIC HISTORY THESIS (HIST 6950) OR PROJECT (HIST 6952)**

Students majoring in public history must complete either a thesis (6 semester hours) or a project (usually 3 semester hours).

### **OPTIONAL THESIS FOR STUDENTS IN U.S., GLOBAL AND EUROPEAN HISTORY (HIST 6950)**

Students majoring in U.S., Global, or European history can choose to write a thesis (6 semester hours in their major field).

### **OPTIONAL ADVANCED HISTORY CURRICULUM DEVELOPMENT (HIST 6951)**

Students who undertake their master's program when they are already teachers or who intend to become teachers can choose to construct curriculum projects relevant to their teaching practice. See the separate section below on "Opportunities for Teachers and Teachers-in-Training."

- HIST 6950 - Master's Thesis
- HIST 6951 - Masters Project: Advanced History Curriculum Development

- HIST 6952 - Master's Project: Public History

## **Thesis Requirements**

Students writing theses are expected to develop an original research agenda resulting in an extended paper. Students work with their major field advisor, who will help guide them through the process of research and writing. Students will enroll for six credit hours in HIST 6950 over one or more semesters to complete their theses. Before registering for HIST 6950, students should have a thesis proposal and initial bibliography approved by their major advisor.

A thesis is evaluated by a committee of three faculty, including the major advisor and two other faculty members chosen by the student in consultation with the major advisor. Upon completion of the thesis, the student meets with the committee members, who ask questions about the research and conclusions which the student must defend. In most instances, the committee will require further revisions, sometimes major in scope, before the thesis is accepted and cleared for submission to the Graduate School in fulfillment of degree requirements.

## **Project Requirements**

In lieu of a thesis, public history majors may choose to enroll in three credit hours of HIST 6952 to complete a public history project. Projects, which are usually conducted in collaboration with a public history organization, can entail creating an exhibit, developing a museum master plan or organizing an archival collection, conducting a preservation survey, or other activities as approved by their advisor. Students are required to prepare an analytical paper describing the process and results of their project.

## **Opportunities for Teachers and Teachers-in-Training**

### **Curriculum Projects**

Licensed teachers and students who intend to become teachers may choose to complete a curriculum development project. Students arrange curriculum development projects with a sponsoring faculty member. Generally, students are expected to develop and submit a complete course curriculum plan for each 3-semester-hour project. Projects need to show evidence of familiarity with the relevant historiographies and primary sources. Students may apply the hours from HIST 6951 to either the major field or the minor field, depending on the project subjects. Curriculum plans must meet minimum criteria established by the history department in the document Advanced History Curriculum Development Projects.

- HIST 6951 - Masters Project: Advanced History Curriculum Development

(3 or 6 semester hours in their major field, or 3 semester hours in their major and possibly 3 semester hours in their minor, if a student elects to do a second project)

## Secondary Teacher Licensure

Students interested in secondary teacher licensure should consult with the School of Education and Human Development. See the Urban Community Teacher Education Program for information.

# Humanities MH

►Graduate School Policies and Procedures apply to this program

## Requirements for Admission

General rules for admission into the Graduate School, as well as the following apply to admission into the MH program:

- evidence of a bachelor's degree
- an official copy of transcripts from all community colleges, colleges, and universities attended
- overall GPA of at least 3.2 out of 4.0
- a writing sample
- three letters of recommendation (at least two from academic sources)
- appropriate undergraduate training or professional background, or experience that provide evidence of ability to pursue the MH degree
- a typed statement specifying the goal of advanced study in the humanities expressed in clear, correct, and effective English. Applicants should provide a statement of their background (education and experience) and its relevance to their proposed interdisciplinary graduate work, and why this graduate program is relevant to their interests.
- standardized test scores are not required, but will be considered if submitted

After meeting all other requirements for admission, applicants may be required to have an interview to discuss their interest in the program and their plans for study. For out-of-state applicants, an appropriate substitute for the interview may be determined by the directors.

## Provisional Admission:



Applicants may be admitted as provisional-status graduate students if their GPA is low and their complete record indicates a high probability of success.

### **Non-degree Students:**

Potential applicants may take CU Denver graduate-level courses as non-degree seeking students (unclassified student with a bachelor's degree) if they:

1. wish to strengthen their record in order to demonstrate their potential to successfully complete courses in the program
- or-
2. wish to start coursework in the program prior to completing their application, with the understanding that taking courses does not guarantee admission

Up to 12 semester hours of CU Denver graduate-level work taken as a non-degree student or taken from another university may be accepted by the program once a student has been admitted to the program. For further information on non-degree graduate student status, see the Information for Graduate Students section of this catalog. In the case of CU Denver graduate students transferring to the MH program, previous coursework may be accepted as appropriate to the MH plan of study.

### **International Students:**

International students must also meet CU Denver requirements for international admission. See the Information for International Students section of this catalog or call 303-315-2230 for further information.

## **Degree Requirements**

The Master of Humanities (MH) program is a 36 credit hour program, of which 30 hours must meet all specifications of the Graduate School. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. A grade below *B- in any given course* will not be counted toward the degree. All graded attempts in required and elective courses are calculated in the major GPA. Courses credited toward the MH degree must typically be taken at CU Denver (a maximum of 12 graduate credit hours may be transferred from other institutions after matriculating into the MH program, subject to the MH director's approval). Students wishing to pursue study abroad options must seek advisor approval in advance.

Students may pursue a general MSS degree or concentrate their studies and coursework on an approved track.

Each student's program is supervised by MHMSS faculty. All independent study, project, and thesis contracts must be approved in advance by the program director. A total of two independent study courses and one internship may count toward the degree. Only one

graduate-level online course (up to 3 hours) may be taken toward the degree, with prior approval. A maximum of two 4000-level undergraduate courses may apply, with faculty approval. Remaining coursework must be 5000-level or higher and must be completed with CU Denver faculty or approved study away programs. All students must complete and pass a final project or thesis and an oral comprehensive defense of that work, in order to graduate.

## Three Required Core Seminar Courses

Take **all** of the following courses:

- HUMN 5025 - Foundations and Theories of Interdisciplinary Humanities  
Must be taken during the first year, offered in the fall only.
- HUMN 5013 - Methods and Practices of Graduate Interdisciplinary Humanities  
Must be taken during the first year, offered in the spring only.
- HUMN 5924 - Directed Research and Reading in Interdisciplinary Humanities  
Students should take this course after they have completed 21-24 credit hours and are ready to write a proposal for their thesis or project. This course is always offered in the spring and occasionally in the fall, as needed.

**Total: 9 Credit Hours**

## Electives

Students must complete a total of 21-24 credit hours. Students completing a project rather than a thesis take 24 hours of electives, while thesis students complete 21 hours of electives. Students may choose to create their own curriculum from at least two disciplines addressing their specific research interest. Alternatively, students may choose to follow an approved specialized track. Prior to taking electives, students must meet with a MHMSS program faculty advisor and establish their course of study. If students decide to change their course of study or want to substitute approved coursework, they must meet with a MHMSS program advisor in advance and gain pre-approval.

**Study Abroad:** Students wishing to count credits accrued from a study abroad program while pursuing the MH must follow the rules of the Graduate School and must have approval of the program director in advance of studying abroad.

**Total: 21-24 Credit Hours**

## Thesis or Project

In order to proceed with a project or thesis, all students must submit a proposal and gain approval from three faculty members and the program directors.

- HUMN 5950 - Master's Thesis
- HUMN 5960 - Master's Project

**Total: 3 or 6 Credit Hours**

## **Oral Exam**

An oral exam defending the project or thesis before a committee of three faculty members must be passed in order to graduate.

**Degree Total: 33-36 Credit Hours**

## **MH Elective Pathways:**

### **General MH Track**

Students pursuing the general MH degree track create a course of study based on their individual interests and goals. In consultation with a faculty advisor, students choose two or three academic disciplines as areas of concentration. Students who opt to complete a thesis will submit a thesis proposal after completing 30 hours of course work. In the case of a project, students will submit a project proposal after 33 hours.

### **Specialized MH Tracks**

Students may also focus in one of the tracks in the Master of Humanities program: **Ethnic Studies, Health Humanities, Philosophy and Theory, Social Justice, Visual Studies or Women and Gender Studies**. Tracks allow students to concentrate their studies in a defined field designed by faculty. Students who opt to complete a thesis will submit a thesis proposal after completing 30 hours of course work. In the case of a project, students will submit a project proposal after 33 hours.

### **Ethnic Studies Track**

Students pursuing the Ethnic Studies track explore the construction of race and ethnicity by governments and communities through the intersection of popular culture and public policy in both the historical and contemporary contexts.

*In addition to the MH Core requirements, students must:*

***Complete at least one ethnic studies methods/theory course from the list below:***

- ETST 5000 - Research Methods in Ethnic Studies

- EDFN 5001 - Problematizing Whiteness: Educating for Racial Justice

***Complete a minimum of 12 credit hours of approved ethnic studies related elective coursework from the list below, substitutions may be approved by the student's advisor:***

- ANTH 5350 - Anthropology of Globalization
- COMM 5270 - Intercultural Communication
- EDFN 5050 - Critical Issues in American Education
- ENGL 5220 - African-American Literature
- ENGL 5460 - Contemporary World Literature
- HIST 5308 - Crime, Policing, and Justice in American History
- HIST 5412 - Mexico and the United States: People and Politics on the Border
- HIST 5415 - Social Revolutions in Latin America
- HIST 5455 - African Struggle for Independence
- HIST 5462 - Islam in Modern History
- HUMN 5770 - Imperialism, Post-Colonial Theory & Visual Discourse
- SSCI 5540 - Law, Diversity and Community in United States History
- PSCI 5094 - Seminar: Urban Politics
- PSCI 5145 - Indigenous Politics
- PSCI 5206 - Social Movements, Democracy and Global Politics
- PSCI 5245 - Gender, Globalization and Development
- PSCI 5256 - Seminar: National Question and Self-Determination
- PSCI 5446 - Advanced Indigenous Peoples' Politics
- PSCI 5545 - Immigration Politics
- PSCI 5914 - Community Organizing and Community Development
- SOCY 5050 - Health Disparities
- SOCY 5440 - Poverty and Social Inequality
- SOCY 5460 - Hate Groups and Group Violence
- SOCY 5690 - Crime and Inequality Over the Life Course
- SPAN 5020 - Spanish Sociolinguistics
- SPAN 5060 - Dialects of the Spanish-Speaking World
- SPAN 5076 - Spanish in Colorado
- SPAN 5080 - Spanish in the United States
- SPAN 5521 - Mexican Literature I: pre-Columbian and Colonial
- SPAN 5522 - Mexican Literature II: 19th to 21st Centuries

*Complete a project or thesis on an approved ethnic studies related topic.*

## **Health Humanities Track**

Health Humanities teaches students to the ways in which humanities disciplines interrogate relationships among health, medicine and society and what those disciplines reveal about biomedical knowledge as well as healthcare policies and practices.

*In addition to the MSS Core requirements, students must:*

**Complete all required foundations courses from the list below:**

- HEHE 5000 Foundations of Health Humanities (offered at the Anschutz Medical Campus)
- HEHE 5001 Foundations of Health Care Ethics (offered at the Anschutz Medical Campus)

***Complete a minimum of 12 credit hours of approved health humanities related elective coursework from the list below, substitutions may be approved by the student's advisor :***

- ANTH 5290 - Anthropology and Public Health
- COMM 5500 - Health Communication
- COMM 5550 - Rhetorics of Medicine & Health
- GEOG 5230 - Hazard Mitigation and Vulnerability Assessment
- GEOG 5235 - GIS Applications in the Health Sciences
- GEOG 5710 - Disasters, Climate Change, and Health
- HEHE 5250 Media, Medicine and Society (on the Anschutz Campus)
- HEHE 5350 Narrative Principles and Practices in Healthcare (on the Anschutz Campus)
- HEHE 5750 Pain Seminar (on the Anschutz Campus)
- HEHE 5800 Ethics Medicine and the Holocaust (on the Anschutz Campus)
- HIST 5347 - History of Biology
- HIST 5348 - Mind and Malady: A History of Mental Illness
- HLTH 6070 - International Health Policy and Management
- PHIL 5242 - Bioethics
- PSCI 5354 - Seminar: Environmental Politics and Policy

*Complete a project or thesis on an approved health humanities related topic.*

## **Philosophy and Theory Track**

The Philosophy and Theory Track in the Master of Humanities Program offers students an interdisciplinary approach to studying philosophy, critical theory, and related theories of criticism and analysis in various Humanities disciplines.

*In addition to the MH Core requirements, students must:*

***Complete a 3 credit philosophy/theory course approved by program director.***

***Complete a minimum of 15 credit hours of approved philosophy/theory related elective coursework from the list below, substitutions may be approved by the student's advisor :***

- ANTH 6103 - Current Theory in Ethnography
- ENGL 5420 - Film Theory and Criticism
- HIST 5306 - Survey of Feminist Thought
- HUMN 5013 - Methods and Practices of Graduate Interdisciplinary Humanities
- HUMN 5020 - Foundations and Theories of Interdisciplinary Social Science
- HUMN 5720 - Sexuality, Gender and Their Visual Representation
- HUMN 5750 - Philosophical Psychology
- HUMN 5984 - Topics: Interdisciplinary Humanities
- PHIL 5101 - Pragmatism: Classical American Philosophy
- PSCI 5206 - Social Movements, Democracy and Global Politics
- PHIL 5220 - Aesthetics and the Philosophy of Art
- PHIL 5242 - Bioethics
- PHIL 5260 - Philosophy of Law
- PHIL 5300 - Philosophy of Mind
- PHIL 5550 - Paris 1910: Art, Philosophy and Psychology
- PHIL 5600 - Philosophy of Religion
- PHIL 5730 - Philosophy and Literature
- PHIL 5750 - Introduction to Phenomenology
- PHIL 5780 - Heidegger
- PHIL 5790 - Nietzsche
- PHIL 5795 - Marx and Marxism
- PHIL 5800 - Plato
- PHIL 5810 - Aristotle
- PHIL 5833 - Existentialism
- PHIL 5900 - John Dewey
- PHIL 5920 - Philosophy of Media and Technology
- PSCI 5457 - Seminar: American Political Thought
- RLST 5060 - Philosophy of Religion
- SOCY 5016 - Social Theory
- WGST 5306 - Survey of Feminist Thought
- WGST 6010 - Methods and Theories of Feminism and Gender Studies

*Complete a project or thesis on an approved philosophy/theory related topic.*

## **Social Justice Track**

The Social Justice Track encourages graduate students to broaden and deepen their intellectual tools as well as their practical knowledge as to how democracy, education, consumerism, media, race, class, gender, policy, and law intersect.

In addition to the MH Core requirements, students must:

***Complete a minimum of 12 credit hours of approved social justice related elective coursework from the list below, substitutions may be approved by the student's advisor:***

- BUSN 6540 - Legal and Ethical Environment of Business
- COMM 5040 - Communication, Prisons, and Social Justice
- ENGL 5190 - Advanced Topics in Writing & Digital Studies (depending on topic)
- ENGL 5306 - Survey of Feminist Thought
- HIST 5032 - Globalization in World History Since 1945
- HIST 5225 - Urban America: Colonial Times to the Present
- HIST 5308 - Crime, Policing, and Justice in American History
- HIST 5415 - Social Revolutions in Latin America
- HIST 5455 - African Struggle for Independence
- HUMN 5650 - Reflections on Modernity
- HUMN 5720 - Sexuality, Gender and Their Visual Representation
- PSCI 5025 - Local Governance and Globalization
- PSCI 5206 - Social Movements, Democracy and Global Politics
- PSCI 5225 - Democracy and Democratization
- PSCI 5245 - Gender, Globalization and Development
- PSCI 5274 - Conflict Resolution and Public Consent Building
- PSCI 5276 - Conflicts and Rights in International Law
- PSCI 5286 - International Relations: War or Peace?
- PSCI 5414 - Non-Profits and Social Change
- PSCI 5545 - Immigration Politics
- PSCI 5555 - International Women's Resistance
- PSCI 5837 - Contemporary Issues in Civil Liberties
- SOCY 5440 - Poverty and Social Inequality
- SOCY 5460 - Hate Groups and Group Violence
- SSCI 6010 - Methods and Theories of Feminism and Gender Studies
- WGST 5303 - Sex and Gender in Modern Britain
- WGST 5307 - History of Sexuality
- WGST 5345 - Gender, Science and Medicine: 1600 to the Present

*Complete a project or thesis on an approved social justice related topic.*

It is **HIGHLY RECOMMENDED** that students in this track take at least one quantitative and/or one qualitative research methods course as part of their plan of study. There are quantitative and qualitative methods courses offered in Anthropology, Environmental Science, Political Science, Sociology, and Research, Evaluation, and Statistical Methodology (RESM), which can be approved by students MHMSS program faculty.

## **Visual Studies Track**

The Visual Studies Track provides students focused studies in disciplines that apply critical analysis to our visual world, such as art history, museum studies, film studies, new media studies, and cultural studies. In a world whose work forces and creative citizenry are focused on the growth and use of visual technologies, visual literacy with sophisticated analytic skills is critical.

*In addition to the MH Core requirements, students must:*

***Complete 3 credit hours of a methods/theory course below:***

- ENGL 5420 - Film Theory and Criticism
- FINE 5790 - Methods in Art History
- HUMN 5660 - Visual Arts: Interpretations and Contexts

***Complete a minimum of 18 credit hours of approved visual arts related elective coursework from the list below, substitutions may be approved by the student's advisor:***

- ARCH 5210 - Introduction to Architecture
- ARCH 5220 - History and Theory Architecture I
- ARCH 5230 - History and Theory Architecture II
- ARCH 6210 - History of American Architecture
- ARCH 6212 - History of Modern Architecture
- ARCH 6220 - History of Architectural Theory
- COMM 5621 - Visual Communication
- ENGL 5770 - Topics in English: Film and Literature
- ENGL 6001 - Critical Theory in Literature and Film
- FINE 4990 - Contemporary Art: 1960 to Present
- FINE 5524 - Topics in Art History II: Modern and Contemporary
- FINE 5610 - Pre-Columbian Art
- FINE 5620 - American Art



- FINE 5632 - History of Digital Media
- FINE 5680 - Art of the Middle Ages
- FINE 5700 - Italian Renaissance Art
- FINE 5705 - Northern Renaissance Art
- FINE 5710 - Baroque and Rococo Art
- FINE 5730 - Arts of Japan
- FINE 5750 - Arts of China
- FINE 5770 - Art of India and Southeast Asia
- FINE 5990 - Contemporary Art:1960-Present
- HIST 5216 - History of American Popular Culture
- HIST 5228 - Western Art and Architecture
- HIST 5231 - History in Museums
- HIST 5232 - Historic Preservation
- HUMN 5720 - Sexuality, Gender and Their Visual Representation
- HUMN 5550 - Paris 1910: Art, Philosophy and Psychology
- PHIL 5220 - Aesthetics and the Philosophy of Art
- PHIL 5550 - Paris 1910: Art, Philosophy and Psychology
- PHIL 5920 - Philosophy of Media and Technology

*Complete a project or thesis on an approved visual arts related topic.*

## **Women's and Gender Studies Track**

Students pursuing the WGST track, focus on issues of sex and gender as they manifest in societies through culture, language, politics, visual representation, and history.

*In addition to the MH Core requirements, students must:*

***Complete at least one WGST theory course from the list below:***

- SSCI/WGST/ HUMN 6010 - Methods and Theories of Feminism and Gender
- WGST/ PHIL 5500 - Feminist Philosophy
- HIST/WGST/ ENGL 5306 - Survey of Feminist Thought
- ENGL/WGST/ HIST 5306 - Survey of Feminist Thought

***Complete a minimum of 12 credit hours of approved women's and gender studies related elective coursework from the list below, substitutions may be approved by the student's advisor:***

- ENGL 5000 - Studies of Major Authors (when the author is a female)
- ETST/ PSCI 4827 - Women and the Law

- WGST/SSCI/ HUMN 5720 - Sexuality, Gender and Their Visual Representation
- SSCI/ HUMN 5770 - Imperialism, Post-Colonial Theory & Visual Discourse
- PSCI 4215 - Women's Rights, Human Rights: Global Perspectives
- PSCI 5555 - International Women's Resistance
- PSCI 5245 - Gender, Globalization and Development
- CRJU 5910 - Nature and Scope of Interpersonal Violence
- CRJU 5930 - Interpersonal Violence Law and Public Policy
- PHIL 5308 - Contemporary Feminist Thought
- PHIL/ WGST 5500 - Feminist Philosophy
- SOCY 5550 - Seminar: Sociology of the Family
- WGST 5230 - Women in the West
- WGST 5248 - Gender, Globalization and Development
- WGST 5303 - Sex and Gender in Modern Britain
- WGST 5306 - Survey of Feminist Thought
- WGST 5307 - History of Sexuality
- WGST 5345 - Gender, Science and Medicine: 1600 to the Present
- WGST 5420 - Goddess Traditions
- WGST 5510 - Whores and Saints: Medieval Women
- WGST 5511 - French Women Writers

*Complete a project or thesis on an approved women's and gender studies related topic.*

## Information Systems MS

**Program Director:** Dawn Gregg

**Telephone:** 303-315-8045

**E-mail:** Dawn.Gregg@ucdenver.edu

The Master of Science in Information Systems (MSIS) program at the Business School is a 30 semester credit hour STEM (Science, Technology, Engineering, Mathematics) degree program that provides students the fundamental knowledge necessary for a career as an IS professional. The MSIS program layers managerial training with technical concepts to help you become a leader in your chosen career path in information technology. You can choose between industry leading specializations in Business Intelligence or Cybersecurity and Information Assurance or customize your own degree to allow you to focus on topics most relevant to your interests. With hands-on software projects, each class will take you one step closer to understanding how to harness the power of technology for business.

Five core courses serve as the foundation for understanding the complex issues that occur when designing, implementing and managing information systems within an organization. Students choose four elective courses which can correspond to a declared specialization or may

reflect a custom course of study. The program culminates with a capstone course that includes a project or a research paper.

The MSIS includes a 4+1 program that allows our current undergraduate information systems students to pursue the Master of Science degree if they achieve a cumulative GPA of 3.00 or higher without taking the GMAT test. Students are also allowed to replace two undergraduate required information systems courses with two graduate information systems courses. Interested students, please contact the Business School advising team for more information.

## **Course Requirements**

### **MS Information Systems Core Courses (15 credits)**

#### **Required Courses:**

- ISMG 6080 - Database Management Systems
- ISMG 6180 - Information Systems Strategy
- ISMG 6430 - Information Systems Security and Privacy

#### **Plus select two of the following courses:**

- ISMG 6060 - Analysis, Modeling and Design
- ISMG 6220 - Business Intelligence Systems and Analytics  
This course is required for the Business Intelligence Specialization
- ISMG 6450 - IT Project Management
- ISMG 6830 - IT Governance and Service Management
- ISMG 6020 - Programming Fundamentals with Python\*
- ISMG 6120 - Network Design and Analysis\*

\* Both of these courses are required for the Cybersecurity and Information Assurance Specialization

### **Elective Courses (15 credits)**

To fulfill the elective requirements, students may complete the Business Intelligence Specialization or the Cybersecurity and Information Assurance Specialization **OR** create a customized degree using any course numbered 6000 or higher with an ISMG prefix (may include core classes not used to satisfy the Core MS IS requirement). In addition, selected 6000 level Business School courses, CVEN, or CSCI courses may be used to satisfy up to 6 elective credits for a customized degree.

## Information Systems Specializations

Students may select from the following two specializations:

### **Business Intelligence Specialization (15 credits)**

Business Intelligence (BI) systems combine operational data with analytical tools to present complex and competitive information to planners and decision makers. The objective is to improve the timeliness and quality of inputs to the decision process. BI is used to understand the capabilities available in the firm; the state-of-the-art, trends, and future directions in the markets, the technologies, and the regulatory environment in which the firm competes; and the actions of competitors and the implications of these actions. With this specialization, you get the necessary skills and knowledge in real-time data warehousing, data visualization, data mining, online analytical processing, customer relationships management, dashboards and scorecards, corporate performance management, expert and advanced intelligent systems, and hands-on experience with leading BI tools.

#### **Choose 4 of the following courses (12 credits):**

- ISMG 6470 - Text Data Analytics
- ISMG 6480 - Data Warehouse and Administration
- ISMG 6810 - Business Intelligence in Healthcare
- ISMG 6820 - Business Intelligence and Financial Modeling
- BANA 6660 - Predictive Analytics Since BANA 6610 is a prerequisite for BANA 6660, if you select BANA 6660 as one of your choices, you may also use BANA 6610 as a choice to fulfill these 12 credits.

#### **Choose 1 free elective course (3 credits):**

Any course numbered 6000 or higher with an ISMG prefix, any 6000-level Business School, CSCI or CVEN course may be used to satisfy the free elective.

#### **Students must complete the following MS IS core course:**

- ISMG 6220 - Business Intelligence Systems and Analytics

### **Cyber Security and Information Assurance Specialization (15 credits)**

With recent breaches in the security of many large government agencies and private corporations, cybersecurity is an issue of great importance to the global society. The

Cybersecurity and Information Assurance Specialization prepares students for cybersecurity, information security, and IT risk management positions in business and critical infrastructure sectors of the economy identified by the U.S. Department of Homeland Security including enterprises such as banks, governments, retail, health care institutions, law enforcement, construction, insurance agencies, transportation and the military.

## **Students must complete ALL of the following 5 courses:**

- ISMG 6340 - Cloud Computing Concepts, Tools, and Security
- ISMG 6860 - Ethical Hacking Concepts and Methodologies
- ISMG 6890 - IT Risk Management
- ISMG 6865 - Digital Forensic Analysis
- ISMG 6910 - Design Science Practicum -- **OR** an approved Internship with required paper and presentation to be completed during the final 9 credit hours of the program.

## **Students must complete the following MS IS core courses:**

- ISMG 6020 - Programming Fundamentals with Python
- ISMG 6120 - Network Design and Analysis

## **Customized Degree**

Students may choose to customize their degree by taking ISMG graduate courses and related graduate technology courses from across the Business School, Computer Science, or GIS programs. Must see an advisor to create.

# **Integrated Sciences MIS**

► Graduate School Policies and Procedures apply to this program

## **Program Description**

Students in the Integrated Sciences program have the opportunity to take courses from a variety of areas in mathematics, the natural and physical sciences (biology, chemistry, environmental sciences, geology, and physics), and computer science in an interdisciplinary STEM program designed for professional growth in their area of interest. These areas are further explored through a required project or thesis that includes focused independent research on a topic that integrates two or three of the disciplines mentioned above.

The length of time it takes to complete the degree is determined by the student's own schedule flexibility; many finish within two years of full-time work. In accordance with Graduate School Rules, the degree must be completed within seven years of matriculation.

## **Admission Requirements**

Admission into the Integrated Sciences program is competitively based. Minimum requirements for an application to be considered are:

- the graduate application form for the University of Colorado Denver, including all application fees
- a statement of purpose specifying why the applicant wishes to be admitted to the program, the applicant's primary and secondary disciplines of interest, and their academic and professional goals
- three letters of recommendation from individuals who can speak to the applicant's academic qualifications, of which at least two must be from academic sources
- transcripts from all institutions of higher learning attended by the applicant
- a bachelor's degree from an accredited college or university
- a minimum cumulative undergraduate GPA of 3.0 on a 4.0 scale; however, applicants with an undergraduate GPA below 3.0 may be considered if they have taken the Graduate Record Examination (GRE) and if the scores are forwarded to the program office
- 40 semester hours of undergraduate courses in biology, chemistry, computer science, environmental sciences, geology, mathematics, and/or physics

Possessing the minimum requirements will guarantee that the application is considered. It does not, however, guarantee admission. The admissions committee will select students competitively to create a high-quality and balanced cohort of participants entering the program each year.

## **Application Deadline**

Students are admitted for the spring and fall semesters. The deadline for a complete application is April 15 for fall admission and October 15 for spring admission.

## **Core Requirement**

Students are required to enroll in MINS 5200, Research Methods in Interdisciplinary Science, within their first year of the program. This course serves as an introduction to the program and helps students to develop research skills and to further their professional development. This course is offered in the fall semester only.

- MINS 5200 - Research Methods in Interdisciplinary Science

## **Concentration and Breadth Requirements**

The student must designate one area of concentration (the primary area of study) and one or two breadth areas (the secondary and, if applicable, tertiary areas of study) within the disciplines of biology, chemistry, computer science, environmental sciences, geology, mathematics or physics. An interdisciplinary area of study (including but not limited to fields such as biochemistry, biophysics, or computational biology) may also be considered. The student must complete a minimum of nine semester hours in the chosen area of concentration and a minimum of six semester hours in each depth area.

## **Project or Thesis Requirement**

The program provides students with two options as their capstone experience, either a project or a thesis, depending on their academic and professional goals. All students must conduct independent research integrating coursework from the disciplines in their program of study. The research is conducted as either a project (requiring 3-4 semester-hours of MINS 5960) or a thesis (requiring 4-6 semester-hours of MINS 5950), and is presented to their examination committee in both written and oral forms. The student must successfully defend their project/thesis in an oral examination (defense) in order to graduate. Prior to enrolling in Project or Thesis hours, all students must submit a proposal approved by three faculty members (one of whom is their graduate faculty advisor) and the Program Director.

- MINS 5950 - Master's Thesis
- MINS 5960 - Master's Project

## **Graduate Advisor and Examination Committee**

All candidates for the MIS degree must select a faculty advisor and arrange for two other faculty members to serve with the advisor as the candidate's graduate examination committee. The committee members must have graduate standing at the University of Colorado Denver and be approved by the Program Director. The name of the faculty advisor must be submitted to the Program Director at the start of the third semester following matriculation to the program.

## **Degree Total: 30 Hours**

# **International Business MS**

**Program Director:** Manuel G. Serapio, Jr.

**Telephone:** 303-315-8888

**E-mail:** Manuel.Serapio@ucdenver.edu

An MS in International Business (MSIB) from the University of Colorado Denver opens opportunities for dynamic careers in global business. MSIB students gain cutting-edge knowledge and skills to help them conduct business across borders.

Our innovative MSIB curriculum combines solid grounding in business foundations and knowledge of international business environments and operations, from both a multinational corporation and entrepreneurial perspective.

Our degree emphasizes action learning such as live case studies, international consulting projects and internships, and study-abroad trips.

The University of Colorado Denver is the only Colorado university, and one of just 17 universities nationwide, granted the U.S. Department of Education's prestigious designation as a Center for International Business Education Research (CIBER), an honor earned in large part through the excellence of the international business program.

The MS program in International Business requires the completion of the following:

## **Business Prerequisites:**

*Advisors will evaluate transcripts for possible prerequisite waivers.*

Students who choose to take classes for the degree that require prerequisites not previously met, may be required to take additional courses. Completion of prerequisite courses is in addition to the 30 hour MS in International Business degree. One BUSN prerequisite may be counted as a Free Elective. Meeting prerequisites is the responsibility of the student.

### **A. International Business Core I: (3 hours)**

- INTB 6000 - Introduction to International Business

### **B. International Business Core II: (12 hours)**

Complete four of the following courses:

- ENTP 6826 - International Entrepreneurship
- INTB 6022 - International Business Negotiations
- INTB 6026 - Marketing Challenges at the Global Frontier
- INTB 6370 - International Accounting
- INTB 6372 - International Financial Management



- INTB 6500 - International Business Consulting This course is repeatable up to two times with different projects.
- INTB 6800 - Special Topics in International Business Only the following INTB 6800 Special Topics course is acceptable for the International Business Core II: New Global Business Opportunities.
- MTAX 6431 - Inbound International Taxation

## **International Immersion Experience: (3 hours)**

Complete one course from the list below:

- INTB 5939 - Internship  
Work with the Institute for International Business (IIB) or Experiential Learning Center (ELC) for an internship.  
One short-term Global Study program (travel study program offered by the Business School)
- INTB 6500 - International Business Consulting This course may be repeated up to two times with different projects.  
NOTE: Students completing the Global Cross Cultural Studies Specialization must complete INTB 6500 because study abroad coursework is already completed as part of the specialization.

## **D. International Specialization Electives: (9 hours)**

Students must complete one of the following Specializations:

- Digital Globalization
- Global Supply Chain
- Cross Cultural Studies

*Only one specialization may be completed.*

Specific Specialization requirements are listed below.

### **Digital Globalization Specialization**

Complete three of the following courses:

- ENTP 6022 - Digital Strategy for Entrepreneurs
- ENTP 6826 - International Entrepreneurship If not taken to fulfill a core requirement.
- INTB 6024 - International Trade Finance and Management
- INTB 6500 - International Business Consulting This course is repeatable up to two times with different projects.

- INTB 6800 - Special Topics in International Business  
Only the following INTB 6800 Special Topics courses are acceptable for this specialization:
- Transformational Technologies in IB
- Global E-Commerce
- ISMG 6875 - Protecting Information Assets
- RISK 6209 - Cyber Risk Management

## **Global Supply Chain Specialization**

Complete three of the following courses:

- BANA 6730 - Supply Chain Analytics
- INTB 6024 - International Trade Finance and Management
- INTB 6500 - International Business Consulting This course may be repeatable up to two times with different projects.
- INTB 6800 - Special Topics in International Business  
Only the following INTB 6800 Special Topics courses are acceptable for this specialization:
- Global E-Commerce
- Global Sourcing and Procurement
- Transformational Technologies in IB

## **Global Cross Cultural Studies Specialization**

**Complete either Option 1 or Option 2.**

**Option 1:** Approved 9 semester credit abroad program (Work with the International Business Program Director for opportunities).

**Option 2:** One course and two travel study courses for a total of 9 semester hours.

Complete one of the following two courses:

- INTB 6800 - Special Topics in International Business  
Only the following INTB 6800 Special Topics courses are acceptable for this specialization:
  - New Global Business Opportunity
  - Comparative Entrepreneurship

Also complete two Short-term Global Study programs offered by the Business School (Listed as Travel Study on the course schedules) for 6 semester hours.

## **E. Free Elective: (3 hours)**

Complete any graduate business course numbered 6000 or higher with a prefix of ACCT, BANA, BUSN, CMDT, ENTP, FNCE, INTB, ISMG, MGMT, MKTG, MTAX, or RISK. NOTE: some of these courses may have prerequisites of a BUSN course that may not be listed on your degree plan. Check with an academic advisor to see if it is possible to waive the prerequisite based on previous coursework. Students who require additional BUSN courses as prerequisites may count one BUSN prerequisite course as a free elective.

## **Total 30 hours (plus any needed prerequisites)**

A course may not be counted in multiple spaces on the degree plan.

# **Landscape Architecture MLA**

**Interim Chair:** Joern Langhorst

**Email:** joern.langhorst@ucdenver.edu

**Telephone:** 303-315-1023

**Associate Chair:** Leila Tolderlund

**Email:** leila.tolderlund@ucdenver.edu

**Telephone:** 303-315-1028

## **Faculty**

### **Professors:**

Lois A. Brink, MLA, University of Pennsylvania

Ann Komara, MLA, MArch Hist, University of Virginia

### **Associate Professors:**

Joern Langhorst, Dipl. Ing. (MLA), University of Hannover

Jody Beck, MArch, PhD, University of Pennsylvania

### **Assistant Professor: (Clinical Teaching Track):**

Leila Tolderlund, MLA, University of Colorado Denver

### **Instructor:**

Louise Bordelon, PhD, MLA, Louisiana State University

Additional information about faculty in this department can be found on the college's website.

## **Overview**

The Master of Landscape Architecture program balances theory and practice to prepare students to create health, well-being and environmental resilience through design in the public realm. Our fully accredited professional program takes full advantage of our location in the heart of Denver, in the rapidly growing metropolitan area and on the edge between the Great Plains and Rocky Mountains. The program enables students to enter practice and offers distinctive opportunities for students to engage in meaningful projects that impact our communities and our built environment. We educate landscape architects to lead the design and planning process that shape the environment; successful graduates pursue diverse practices and occupations in public and private arenas around the world.

Our students investigate relevant issues through coursework and immersive experiences that challenge them to think critically about the applications and implications for the work we do. While grounded in design and professional skills, the curriculum is structured to fluidly address evolving and urgent concerns for our profession, our communities and our environment through topics such as health and well-being, environmental justice, climate resilience, water in the west, food systems, and emerging sustainable practices.

## **The Degree**

The Master of Landscape Architecture (MLA) curriculum revolves around a sequence of design studios, supported by core content classes and a variety of seminar courses. We deliver a fully accredited Master of Landscape Architecture for first professional degree students and post-professional students (those already holding a Bachelor of Landscape Architecture or Bachelor of Architecture degree).

Our program combines theory and practice, emphasizing design to create health and well-being and environmental resilience through design in the public realm. The curriculum fosters an ethic of responsibility, grounded in natural systems and processes and in an understanding of cultural and community values. Students learn skills working on relevant urban and civic projects in both local and global contexts and at a variety of scales. Studios and other courses engage current issues, define future trends, and explore the role of landscape architecture in a rapidly changing world. Throughout the program, our students learn and apply design and planning skills, approaches and technologies to enhance community, foster equity and environmental balance, conserve and regenerate resources, and create places that hold value for current and future generations.

Denver's vibrant professional design and planning community supports our students through guest lectures and participation in design reviews, internships and mentor programs, and opportunities to visit offices and connect with practitioners and leaders in our fields.

## Program Objectives

The department has developed five broad program objectives in support of our educational mission. These objectives identify what students should know and be able to do by the time they graduate and are linked to a series of measurable student learning outcomes. The five categories are:

- **Design:** Students will be able to formulate questions and arguments about landscape and its role as a significant cultural medium, and determine processes and practices that lead to transformative actions based on ethical, communicative and content knowledge criteria.
- **Communication and Representation:** Students will be able to create and employ appropriate representational media to effectively convey ideas on subject matter contained in the professional curriculum to a variety of audiences, and to articulate and convey ideas orally and in writing.
- **Professional Ethics:** Students will be able to critically evaluate local and global ramifications of social issues, diverse cultures, economic and ecological systems, and professional practice as guiding principles for design thinking and implementation.
- **Content Knowledge:** Students will be able to develop a critical understanding and application of the histories, theories and practices of landscape architecture and its role in reflecting and shaping culture and environments.
- **Research:** Students will be able to develop and apply a diligent, systematic and critical inquiry in support of design and scholarship.

## Central Themes

The MLA program prepares students to address current and future problems and challenges in local, regional and global contexts. An issues-based approach ensures that students will be exposed to and participate in the development of new responses to emergent and ongoing crises and opportunities, emphasizing environmental and social justice as a key element for the design of livable, sustainable and resilient places and landscapes. Examples of this are deep in the department's work over the past twenty-five years, with examples such as working for five years with the local community of the Lower 9th Ward in New Orleans addressing issues around recovery after Hurricane Katrina, and the Learning Landscapes program which successfully redesigned almost 100 schoolyards in Denver, an initiative which is now focused on Philadelphia schools. Recently we have addressed issues of water, food scarcity and urban agriculture in Denver, the redesign and recovery of post-industrial sites and mining landscapes throughout the state, and issues of health and livability in marginalized and underserved communities and neighborhoods. Many of these projects have involved multiple courses over several years, and have made major impacts on the places and communities they have engaged. Students are immersed in opportunities to not just learn, but to make meaningful

change, and interact with community members and professionals from many different backgrounds and disciplines, gaining invaluable experience and skills in working and communicating in interdisciplinary teams.

## **Big Thinking**

We believe that the issues, challenges and opportunities landscape architects face are interrelated, spanning all scales from a small private yard to neighborhood to city to region to the world, and involve a wide range of social, cultural, ecological and economic systems, requiring critical and creative thinking that transcends scales and is cross-, trans- and interdisciplinary.

## **Critical Issues**

We strongly believe that Landscape Architecture is uniquely positioned to make major contributions to the big and urgent questions and issues that affect human and non-human systems. Climate change, resource scarcity, water and food are as critical as the design and building of landscapes and places that are about more than just sustainability and resilience and provide opportunities for people to thrive.

## **Meaningful Change**

While the functioning and performances of human and non-human systems are critical, good design does more than just provide solutions to problems. It provides opportunities for people to interact with places over time, it empowers them to understand the dynamics that affect their environments and to participate in the ongoing processes of changing place and changing communities, thus becoming authors and co-authors of the places they shape and inhabit.

## **LANDSCAPE ARCHITECTURE MLA**

### **Prerequisites**

Students are expected to have achieved a basic level of computer literacy prior to enrolling in the first semester of classes. The department offers a required Introductory Skills Workshop for students before classes begin that is particularly helpful for students who do not have a background in drawing or computer graphics. The workshop is scheduled each year prior to the beginning of fall semester.

### **Program Requirements**

The landscape architecture program offers first professional and post-professional graduate courses leading to the degree Master of Landscape Architecture (MLA). The program is fully

accredited by the Landscape Architecture Accreditation Board (LAAB) and recognized by the Council of Educators in Landscape Architecture (CELA).

- The first-professional degree program requires a six-semester sequence of course work totaling 90 semester hours.
- The post-professional degree program is for qualified students who have already earned a first professional degree in landscape architecture (BLA) or related discipline. It requires a minimum of 60 semester hours. Advanced standing is based on prior academic accomplishment.
- Students completing the College of Architecture and Planning's BSArch degree or an accredited undergraduate design degree at another institution may be given advanced standing in the three-year program. Advanced standing is based on prior academic accomplishment, and is evaluated on an individual basis upon acceptance into the program.

## Course Sequence (First Professional Degree)

**(90-semester-hour MLA for students without a professional degree in landscape architecture or related professional field)**

The curriculum consists of core and elective course work, including the immersive semester.

	<i>Semester hours</i>
Design Studios	33
History and Theory	12
Site Works	12
Media	12
Critical Practice	6
MLA Electives	9
General Electives	6
<i>Total courses</i>	90

**Typical 90-semester-hour sequence of courses for the first professional MLA degree (subject to change)**

### First Year

## Fall

- LDAR 5510 - Graphic Media in Landscape Architecture
- LDAR 5521 - History of Landscape Architecture
- LDAR 5572 - Landscape Ecology
- LDAR 6631 - Landscape Construction Materials and Methods
- LDAR 6641 - Computer Applications in Landscape Architecture

**Total: 15 Hours**

## Spring

- LDAR 5500 - Introductory Landscape Architecture Design Studio
- LDAR 5532 - Landform Manipulation
- LDAR 5540 - Introduction to GIS
- LDAR 6620 - Landscape Architecture Theory and Criticism
- LDAR 6630 - Site, Society and Environment

**Total: 15 Hours**

## Second Year

### Fall

- LDAR 5502 - Landscape Architecture Design Studio 2
- LDAR 6949 - Research Tools & Methods
- LDAR 6670 - Plants in Design
- One elective. **Semester hours: 3**

**Total: 15 Hours**

### Spring

- LDAR 5503 - Landscape Architecture Design Studio 3
- LDAR 6604 - Landscape Architecture Design Studio 4
- LDAR 6605 - Landscape Architecture Design Studio 5
- One elective. **Semester hours: 3**

**Total: 15 Hours**



## Third Year

### Fall - Immersive Semester

- LDAR 6706 - Advanced Landscape Architecture Design Studio Immersive (travel may be required)
- LDAR 6740 - Advanced History/Theory Seminar - Immersive Semester
- LDAR 6745 - Advanced Media/Technology Seminar - Immersive Semester
- LDAR 6750 - Professional Practice

**Total: 15 Hours**

### Spring

- LDAR 6607 - Landscape Architecture Design Studio 7
- LDAR 6608 - Landscape Architecture Design Studio 8
- Studio Alternative: Landscape Architecture Thesis (requires department approval)
- Three Electives. **Semester hours: 9**

**Total: 15 Hours**

## Course Sequence (Advanced Professional Degree)

**(60-semester-hour MLA for students with a professional degree in landscape architecture or related disciplines)**

The curriculum typically requires 60 semester hours and two years of full-time study, with the Immersive Studio and its concurrent courses in the fall of the second year. The core curriculum consists of three groups:

	<i>Semester Hours</i>
Design	24
History and Theory	9-12
Media	3-9
Electives	3-9
<i>Total courses</i>	60

The department chair or associate chair will advise each student engaged in this program of study.

## **Thesis**

The graduate thesis in landscape architecture provides an opportunity for students to conduct independent research and design investigations that demonstrate their capacity for rigorous original thinking. The thesis is not required for graduation and not all students are approved to write a thesis. Choosing to pursue a thesis project constitutes a significant commitment to the endeavor; the topic must be chosen with care and thoughtfully and critically developed. Topics can explore material that has been previously unstudied, reinterpret existing material in a new light, or engage research and design practices in ways that strengthen and define the final project. For all theses, the research and products must meet the highest standards of academic excellence and contribute significantly to the discipline and/or profession.

Pursuing a thesis requires students to enroll in a three-course sequence for a maximum total of 12 semester hours. Students are required to formulate their research proposals two full semesters prior to their enrollment for the 6-semester-hour thesis, typically taken in lieu of the final studio. To proceed through the sequence, students must have completed and passed the research tools and methods class (LDAR 6949) and have secured departmental approval of the thesis proposal. The completion of the thesis is dependent on acceptance of the student's work by the faculty member acting as the thesis chair and by the committee. For work to be accepted it must meet the standards established by the University of Colorado Denver for graduate thesis projects.

## **Dual Degree and Certificate Options**

Students may enroll in a dual degree program with architecture (MArch) or urban and regional planning (MURP).

Students may apply to the concurrent degree option for the one-year (36 credit) Master of Urban Design (MUD) degree, for which up to 12 credits of advanced standing is possible.

Students also may be selected through an application process to participate in our exchange program with Tongji University in Shanghai, China; this is in place for the spring semester of the second year.

A certificate in Geospatial Information Science (GIS) for Landscape Architecture is also available to students interested in pursuing geospatial design.

# Leadership for Educational Organizations (non-licensure): Early Childhood Education Concentration

The Leadership for Educational Organizations MA concentration area in Early Childhood Education was developed for alumni of the Buell Early Childhood Leadership Certificate and serves to prepare leaders for positions in early childhood education. Buell alumni will utilize 15 of the graduate-level ECED credits earned as part of the Buell Early Childhood Leadership Certificate to this master's degree, and will complete an additional 15 credit hours to obtain the LEOS MA: Early Childhood Education degree. The content of this concentration focuses on leadership for equity and social justice.

This 30 credit hour degree is designed to be completed in approximately one year after completion of the one year Buell Early Childhood Leadership Certificate program. Curriculum focuses on leadership for equity and social justice and consists of an additional 15 credit hours of coursework as follows:

## **Leadership Core (12 semester hours):**

EDUC 5651 - Foundations of Leadership

EDUC 5652 - Leadership for Equity/Social Justice

EDUC 5653 - Leadership Practices for Responsive Change

EDUC 5654 - Leadership Practice Capstone

## **Research Methods (Choose one 3 semester hour course from options below):**

RSEM 5100 - Basic Statistics (recommended if you have never taken a statistics course)

RSEM 5110 - Introduction to Measurement

RSEM 5120 - Introduction to Research Methods

# Leadership for Educational Organizations EdS with Principal Licensure

The EdS degree program affords the opportunity for advanced graduate study and is available to those who already hold a master's degree (completed prior to admission into the EdS LEO program.) For the specialist degree, students will complete 9 semester hours of faculty advisor approved graduate-level coursework that constitute an area of focus, in addition to the 32 semester hours required in the Principal Licensure program. The Leadership for Educational Organizations EdS requires a total of 41 semester hours of coursework. Candidates must also successfully complete a comprehensive exam in the final semester. The Comprehensive exam will include one of two options:

1. Academic Paper / Multimedia Product(s) Summarizing Learning Across Courses and the Colorado Principal Quality Standards (CPQS)
2. Performance Assessment Targeting a Focused Subset of the CPQS

The 9 semester hours beyond the 32 semester hour principal licensure program must constitute an area of focus and/or a specific advancement of knowledge and skills for the license. Students can choose 9 semester hours (3 courses) from the following options (or receive faculty approval for other relevant graduate-level coursework):

EDUC 7100 - Leadership in Education

EDUC 7230 - Organizational Performance In Educational Contexts

EDUC 7500 - Strategic Human Capital Development

EDUC 7510 - Strategic Organizational Management

EDUC 7520 - Strategic System Improvement

EDUC 7530 - Strategic Leadership Development

## **Leadership for Educational Organizations MA Principal Licensure**

The MA is designed for those who do not already hold a graduate degree. Master's students will complete 32 semester hours required in the Principal Licensure, for a total of 32 semester hours of coursework. Candidates must also successfully complete a comprehensive exam in the final semester. The Comprehensive Exam will include one of two options:

1. Academic Paper / Multimedia Product(s) Summarizing Learning Across Courses and the Colorado Principal Quality Standards (CPQS)
2. Performance Assessment Targeting a Focused Subset of the CPQS

# Learning Design and Technology: eLearning Design and Implementation MA

The focus of this track is on the planning, design, development, delivery, facilitation and evaluation of digital and online learning resources, experiences, and programs for higher education, K-12, and professional-learning (corporate, healthcare, government, non-profit) audiences. Throughout the program, you will apply learning, instructional and media design, and professional-development theory to the creation of digital and online instructional products and experiences while encouraging innovation and positive change within your organization. You will submit an online portfolio in the final semester, referred to as a base camp. The base camp helps you establish your professional web presence and digital footprint as a thought leader and helps showcase your accomplishments and share your work with your professional communities of practice. The entire program is online, and may be completed in two years.

## eLearning Design and Implementation MA program requirements

**30 semester hours (each course is 3 semester hours):**

**Core, 24 semester hours:**

INTE 5100 - Planning and Designing for Instruction
INTE 5665 - Learning with Social Media and Networking
INTE 5680 - Producing Media for Learning
INTE 5670 - Creating Synchronous eLearning Experiences
INTE 5711 - Creative Designs for Instructional Materials
INTE 6750 - Trends and Issues in Learning Design and Technology
INTE 5660 - Developing Self-Paced Online Modules

INTE 6720 - Research in Learning Design and Technology
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**Electives, Choose two courses (6 semester hours):**

INTE 5250 - Teaching Strategies for Online and Blended Learning
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INTE 5200 - Crafting eLearning Experience
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INTE 5320 - Games and Learning
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INTE 5340 - Learning with Digital Stories
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INTE 6930 - Internship: Learning Technologies
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INTE 6999 - Leadership for Technology Innovation
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INTE 5000 - Design Thinking and Educational Innovation
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**Comprehensive Examination for all LDT Students**

The comprehensive exam consists of a professional portfolio, referred to as a base camp, wherein students demonstrate program competencies through work products and related accomplishments. The base camp is created throughout the LDT program and submitted for faculty review during the final semester. For more information, see the LDT Current Student Resources website <https://education.ucdenver.edu/academic-services/student-resources/graduate/learning-design-technology>.

# **Learning Design and Technology: Digital Media for Teaching and Learning (K-12) MA**

Students in this track may select a plan with or without an endorsement program in instructional technology. Courses in the endorsement option focus on the practical needs of teachers in their integration of technology and on ways to give leadership and professional development opportunities to your school and district. The plan of study is accredited by the Council for the Accreditation of Educator Preparation (CAEP) and is designed in line with the

International Society for Technology in Education (ISTE) Standards for Educators and the standards of the Colorado Department of Education (CDE.) You will submit an online portfolio in the final semester, referred to as a base camp. The base camp serves as a learning resource for your students, colleagues, and other professionals. The courses in this program are fully online unless specified otherwise, and the program may be completed in two years.

**Digital Media for Teaching and Learning K-12 MA program with Instructional Technology Endorsement requirements**

**30 semester hours (each course is 3 semester hours):**

INTE 5665 - Learning with Social Media and Networking
INTE 5200 - Crafting eLearning Experience
INTE 5340 - Learning with Digital Stories
INTE 5320 - Games and Learning
INTE 5250 - Teaching Strategies for Online and Blended Learning
INTE 6750 - Trends and Issues in Learning Design and Technology
Select one: INTE 5711 - Creative Designs for Instructional Materials <b>or</b> INTE 5680 - Producing Media for Learning
INTE 6720 - Research in Learning Design and Technology
INTE 6999 - Leadership for Technology Innovation
INTE 6930 - Internship: Learning Technologies

**Personalized Professional MA Learning Design and Technology without Endorsement, Digital Media for Teaching and Learning requirements**

For the Digital Media for Teaching and Learning concentration there are 3 required core courses (9 semester hours.) In consultation and with approval from your faculty advisor (mentor), select 5 graduate-level courses (15 semester hours) from Advisor-approved "Thematic Course Categories" to customize your learning. Finally, take the required research

course (3 semester hours) and then complete the Capstone course (3 semester hours) for a total of 30 semester hours. This plan does NOT lead to an endorsement.

**30 semester hours (each course is 3 semester hours):**

**Core, 9 semester hours:**

INTE 5340 - Learning with Digital Stories
INTE 5320 - Games and Learning
INTE 5665 - Learning with Social Media and Networking

**Thematic Course Categories, 15 semester hours (requires Faculty Advisor approval):**

Course 1
Course 2
Course 3
Course 4
Course 5

**Research and Capstone, 6 semester hours:**

INTE 6720 - Research in Learning Design and Technology
INTE 6930 - Internship: Learning Technologies

**Comprehensive Examination for all LDT Students**

The comprehensive exam consists of a professional portfolio, referred to as a base camp, wherein students demonstrate program competencies through work products and related accomplishments. The base camp is created throughout the LDT program and submitted for faculty review during the final semester. For more information, see the LDT Current Student Resources website <https://education.ucdenver.edu/academic-services/student-resources/graduate/learning-design-technology>



# Learning Design and Technology: Instructional Design and Adult Learning MA

This track is designed to help you develop skills for creating quality instructional materials and professional-learning experiences that help adult-learning audiences learn and perform better on the job. Throughout the program, you will apply learning, instructional design (ID), and professional-development principles to the creation of digital and web resources, multimedia presentations, job aids, and online learning modules. These skills are in high demand in corporate, healthcare, government, non-profit, and higher education settings. You will experience interactive learning, hands-on projects, and collaborative teamwork as you develop expertise in core ID skills: creating curriculum, evaluating program quality, encouraging innovation, and leading organizations toward productive change and growth. You will submit an online portfolio in the final semester, referred to as a base camp. The base camp helps you establish your professional web presence and digital footprint as a thought leader and helps showcase your instructional-design accomplishments to employers and other professionals. The courses in this program are fully online unless specified otherwise, and the program may be completed in two years.

## Instructional Design and Adult Learning MA program requirements

**30 semester hours (each course is 3 semester hours):**

**Core, 15 semester hours:**

INTE 5100 - Planning and Designing for Instruction
INTE 5665 - Learning with Social Media and Networking
INTE 6750 - Trends and Issues in Learning Design and Technology
INTE 5711 - Creative Designs for Instructional Materials
INTE 6720 - Research in Learning Design and Technology

**Electives, Choose five courses (15 semester hours):**

INTE 5660 - Developing Self-Paced Online Modules
INTE 5320 - Games and Learning
INTE 5670 - Creating Synchronous eLearning Experiences
INTE 5680 - Producing Media for Learning
INTE 5200 - Crafting eLearning Experience
INTE 5250 - Teaching Strategies for Online and Blended Learning
INTE 5340 - Learning with Digital Stories
INTE 6930 - Internship: Learning Technologies
INTE 6999 - Leadership for Technology Innovation
INTE 5000 - Design Thinking and Educational Innovation

**Comprehensive Examination for all LDT Students**

The comprehensive exam consists of a professional portfolio, referred to as a base camp, wherein students demonstrate program competencies through work products and related accomplishments. The base camp is created throughout the LDT program and submitted for faculty review during the final semester. For more information, see the LDT Current Student Resources website <https://education.ucdenver.edu/academic-services/student-resources/graduate/learning-design-technology>.

**Learning Design and Technology:  
Teacher Library MA**

The Teacher Library program within the LDT master's degree program is a revised and approved teacher librarian education program that leads to the Colorado Department of Education endorsement for teacher librarians. The program integrates 21st Century Learning Standards as approved by the American Association of School Libraries with CDE content standards and

leadership competencies. As a teacher librarian, you will provide collaborative instructional planning, facilitation of professional learning, utilization of information and media literacy, online instructional resources, and leadership through the management of your library program.

Students in this track may select a plan with or without an endorsement program in teacher librarianship. The courses in this program are fully online unless specified otherwise. Once admitted, students begin a plan of study that typically takes about two years to complete. You will create an online portfolio, referred to as a base camp. The base camp serves as a learning resource for your students, colleagues, and other professionals. Consult the program website <https://education.ucdenver.edu/academic-services/student-resources/graduate/learning-design-technology> for more information about specific plans of study, course offerings and expectations of the program.

## Program Requirements

LDT-Teacher Library students also have a choice between a teacher librarian endorsement and a full master's program with a teacher-librarian endorsement. The endorsement only option requires a minimum of 24 graduate semester hours. The master's program requires a minimum of 30 graduate semester hours. Students complete a plan of study consisting of courses and professional field experience. Students must be licensed as a teacher or plan to complete a teacher license prior to seeking the additional endorsement as a Teacher Librarian. This is a Colorado Department of Education requirement. Students may complete the master's program without earning the endorsement.

Courses are offered only in certain semesters and courses should be taken in a particular sequence based on when you start the program. Advising is required prior to enrolling in a course, even as a non-degree student, in order to ensure the most effective course sequencing and availability of courses.

### 30 Credit MA Degree Plan of Study

<b>Prefix: Course Title</b>	<b>Term offered:</b>	<b>Credits</b>
SCHL 5100 - School Libraries in the Digital Age	Fall	3
SCHL 5030 - Information Literacy	Fall	3
SCHL 5160 - Managing School Libraries	Spring	3
INTE 6720 - Research in Learning Design and Technology	Spring	3

SCHL 5200 - Promoting Literature in Schools	Summer	3
SCHL 5913 - School Library Field Experience	Fall	3
INTE 5300 - Media Literacy	Summer	3

## CONCENTRATION

Choose three courses from INTE or from one of SEHD or LDT certificate programs with advisor approval.	9
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## Comprehensive Examination for all LDT Students

The comprehensive exam consists of a professional portfolio, referred to as a base camp, wherein students demonstrate program competencies through work products and related accomplishments. The base camp is created throughout the LDT program and submitted for faculty review during the final semester. For more information, see the LDT-Library Current Student Resources website.

# Learning, Developmental and Family Sciences MA

**Office:** Lawrence Street Center, 701

**Telephone:** 303-315-6300

**Fax:** 303-315-6311

**E-mail:** academicservices@ucdenver.edu

**Website:** www.ucdenver.edu/education

## Faculty

Faculty information is available online at <https://education.ucdenver.edu/about-us/faculty-directory>

## Master's Degree

The MA program in Learning, Developmental and Family Sciences (LDFS) prepares students to facilitate the teaching/learning process and to lead and work in community-based

environments. Thus, many students pursue the degree to enhance their skills as professional classroom teachers or lead in the community. The degree also provides skills necessary for a variety of roles in educational and teaching settings or community environments where knowledge of learning, development, understanding family and community systems, motivation, and research is essential such as teaching at the community college and teaching-based colleges and universities levels, teaching adults, consulting, developing assessments, community-based leadership, and conducting program development and evaluation. Other students seek the MA as preparation for advanced study in educational psychology, family science and human development, research, or related fields.

## **Areas of Study**

Two major areas of concentration are available- learning and human development and family relations:

- Regardless of the concentration area selected, all students must demonstrate competence in Learning, Developmental and Family Sciences by successfully completing 30 semester hours of relevant course work;
- Students complete a capstone experience, either an applied project or a master's thesis in consultation with their faculty advisor based on the students' professional and academic goals. Please see final capstone section for more details.

## **Learning**

The concentration is committed to the systematic study of psychological, social, and cultural processes of learning and development, and design of environments that support learning and development, drawing upon multidisciplinary nature of work. The concentration examines learning in various formal and informal contexts (e.g., learning in classrooms, schools, centers, communities, homes) from multiple perspectives (e.g., psychological, sociocultural, design-based, neuroscience). Within the networks of professional and academic communities, students will engage in designing adaptive learning environments that facilitate optimal learning and developmental opportunities for participants in diverse educational and community contexts, including our unique urban context. The Learning concentration offers courses such as: Human Learning; Human Development Over the Life Span; Designing Environments for Learning and Development; Cognition and Instruction; Motivation in Contexts; Mind, Brain and Education; Advanced Child Growth and Development; and Social Contexts of Adolescence.

## **Human Development and Family Relations (HDFR)**

Students will engage in developing their skills to work in and lead community-based organizations including, but not limited to secular, faith-based, for profit, nonprofit, school-

based, and local, state, federal and international organizations. The importance of family diversity and social justice is stressed throughout the HDFR curriculum through its courses and experiences. Students can also develop their knowledge in family relations in preparation for doctorate studies in family science and human development or related areas.

The LDFS program does provide a pathway for MA students (HDFR and Learning areas) to pursue their PhD in Education and Human Development with a Family Science and Human Development concentration. For more information, please visit our School of Education and Human Development.

The HDFR area also provides classes to all School of Education and Human Development (SEHD) graduate programs, offering courses in family theories, family dynamics, and diverse family systems, Latino family, school and community systems, family resource management, leadership and organizations, grant writing and fundraising, program development and other family relations based courses.

### **Final Capstone Culminating Applied Project/Thesis**

All LDFS MA students (D1--Downtown Campus) will complete a Capstone Applied Project or Thesis to be able to graduate from the LDFS MA regardless of concentration area. Students who are graduating in the Fall, Spring or Summer of their last year of studies will register for LDFS 6950 Culminating Capstone Experience. LDFS 6950 will only be offered in the Fall semester of each academic year. There will be no Spring or Summer LDFS 6950 sections offered. LDFS 6950 has two focuses, the Applied Project and the second focus the Thesis. The Applied Project is generally completed in one semester during the Fall LDFS 6950 class. However, if a student requires an additional semester that student would have to receive permission from the LDFS 6950 faculty teaching that course section during the Fall semester and their faculty advisor for the additional time. The second focus the Thesis will require 2 semesters to complete or 1 semester and a Summer Session. Please keep in mind the Thesis often requires university approval and IRB approval for Human Subjects research. Students will receive a letter grade upon completion of their Capstone. Students are expected to attend one of the required LDFS MA Capstone Orientation provide by the LDFS faculty during the Fall and Spring semester of each academic year. For more specific details concerning the Capstone please contact your faculty advisor.

## **Literacy Education MA**

For the MA in Literacy Education, there are 3 required core courses (9 credits hours). In consultation and with approval from your faculty advisor, select 5 courses from the SEHD Thematic Course Categories list to customize your learning (15 credit hours). For instance, you may want to focus on courses that would improve your elementary or secondary teaching and leadership abilities. Finally, take a research course (3 credit hours) and then complete the Capstone course (3 credit hours) for a total of 30 credit hours.

**This degree plan does not include a license or an endorsement.**

### **Literacy Core Courses** (9 credit hours)

- LCRT 5720 - Writing Development, Instruction and Assessment
- LCRT 5020 - Reading Development, Instruction and Assessment
- LCRT 5055 - Literacy Assessment & Informed Instruction

### **Thematic Course Categories** (15 credit hours)

In consultation and with approval from your faculty advisor, select five courses from the Thematic Course Categories to customize your learning.

- Course 1
- Course 2
- Course 3
- Course 4
- Course 5

### **Concentration Research Course** (3 credit hours)

- RSEM 5050 - Classroom Assessment **or** RSEM 5080 - Research In Schools
- **Or** other RSEM courses with Advisor Approval

### **Concentration Capstone Course** (3 credit hours)

- LCRT 6915 - Seminar and Practicum in Literacy Professional Development

### **Total Credit Hours 30**

### **Cumulative Portfolio**

The MA portfolio counts as the comprehensive exam for the master's degree. The portfolio is an accumulation of the performance based assessments completed during program courses and reflects on the student's development over the course of the degree program.

### **Program Requirements and Courses**

To complete the Literacy Education program and earn a master's degree and/or endorsement, students must complete the appropriate course work as outlined. All courses require a grade of B- or better to count to the MA or endorsement and a 3.0 minimum GPA is required for graduation.

### **Course Scheduling**

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, three-to eight-week sessions are offered, and courses may be in the morning, afternoon or evening.

### **Planning**

For practicing full-time teachers, we recommend taking one course each fall and spring semester, and up to two courses each summer. Plan carefully because some courses are only offered once a year.

### **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

# **Literacy Education MA in English Education**

This MA degree prepares licensed Secondary English or Secondary language arts teachers to work with diverse adolescents as they develop an appreciation for literature and composition. Course work includes theory and methods of English education, linking assessment and instruction, and practicum experience. The study of contemporary, ethnic, and classic literature, reading, and writing are woven together, along with speaking, listening, and viewing.

### **Concentration Courses** (9 credit hours)

- LCRT 5200 - Theory and Methods of English Education
- LCRT 5201 - Adolescent Literature
- LCRT 5720 - Writing Development, Instruction and Assessment

### **English and Inventory Courses** (15 credit hours)

- ENGL \_\_\_\_\_ (in Literature, Writing, Film, or Language Study)
- ENGL \_\_\_\_\_ (in Literature, Writing, Film, or Language Study)
- ENGL \_\_\_\_\_ (in Literature Writing, Film, or Language Study) **or** Choice Course from SEHD Thematic Course Categories with Advisor Approval
- \_\_\_\_\_ Choice Course from SEHD Thematic Course Categories with Advisor Approval
- \_\_\_\_\_ Choice Course from SEHD Thematic Course Categories with Advisor Approval

### **Research** (3 credit hours)

- RSEM 5050 - Classroom Assessment **or** RSEM 5080 - Research In Schools
- **Or** other RSEM course with Advisor Approval

### **Capstone** (3 credits)

- LCRT 6915 - Seminar and Practicum in Literacy Professional Development

### **Total Credit Hours 30**

### **Cumulative Portfolio**



The MA portfolio fulfills the comprehensive exam requirement for the master's degree. The portfolio is an accumulation of the performance based assessments completed during program courses and reflects on the student's development over the course of the degree program.

### **Program Requirements and Courses**

To complete the Literacy Education program and earn a master's degree, students must complete the appropriate course work as outlined. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

### **Course Scheduling**

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, three-to eight-week sessions are offered, and courses may be in the morning, afternoon or evening.

### **Planning**

For practicing full-time teachers, we recommend taking one course each fall and spring semester, and up to two courses each summer. Plan carefully because some courses are only offered once a year.

### **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

# **Literacy Education MA with Reading Teacher K-12 Endorsement**

This MA with endorsement is designed for K-6 and 7-12 teachers and is credentialed meeting the Colorado Department of Education requirements for the Reading Teacher endorsement. Recommendations for endorsements are made by the program, but endorsement is granted by the State of Colorado. Individual state requirements vary and may include teaching experience in addition to a valid teaching credential. Students should consult with the Colorado Department of Education (<http://www.cde.state.co>) or another state in which they wish to be endorsed for the most updated endorsement requirements. Please note that the Colorado Department of Education also requires 2 years of post-licensing teaching experience and a passing score on the Reading Teacher PRAXIS exam for the application for the reading teacher endorsement after graduation.

This degree is available on-campus or completely online.

**Literacy Core Courses** (9 credit hours)

- LCRT 5810 - Oral & Written Language & Literacy
- LCRT 5020 - Reading Development, Instruction and Assessment
- LCRT 5055 - Literacy Assessment & Informed Instruction

### **Content Courses** (15 credit hours)

- LCRT 5710 - Primary Literacy for Diverse Learners, Pre K-Grade 3 **or** LCRT 5730 - Language and Literacy Across the Curriculum
- LCRT 5720 - Writing Development, Instruction and Assessment
- LCRT 5795 - Current Children's Literature **or** LCRT 5201 - Adolescent Literature
  - (Or LCRT 5780 , or LCRT 5790 are offered occasionally)
- LCRT 6910 - Seminar & Practicum in Literacy and Language
- Choice from SEHD Thematic Course Categories list with Faculty Advisor Approval

### **Research Course** (3 credit hours)

- RSEM 5050 - Classroom Assessment **or** RSEM 5080 - Research In Schools
- **Or** other RSEM course with Advisor Approval

### **Capstone** (3 credit hours)

- LCRT 6915 - Seminar and Practicum in Literacy Professional Development

Portfolio (Comprehensive Exam)

### **Total Credit Hours 30**

### **Cumulative Portfolio**

The MA portfolio fulfills the comprehensive exam requirement for the master's degree. The portfolio is an accumulation of the performance based assessments completed during program courses and reflects on the student's development over the course of the degree program.

### **Program Requirements and Courses**

To complete the Literacy Education program and earn a master's degree and endorsement, students must complete the appropriate course work as outlined. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

### **Course Scheduling**

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, three-to eight-week sessions are offered, and courses may be in the morning, afternoon or evening.

### **Planning**

For practicing full-time teachers, we recommend taking one course each fall and spring semester, and up to two courses each summer. Plan carefully because some courses are only offered once a year.

## **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

# **MA in Special Education**

The 30 credit hour Personalized Professional MA path provides the opportunity for you to personalize your coursework to your specific professional goals as an educator. This MA does NOT lead to a license or an endorsement. A current teaching license is not required for the Personalized Professional MA.

Students in this MA degree plan will choose 3 courses (9 credits) from the SPED core course options. Then, in consultation and with approval from, your faculty advisor, select 5 courses from the Thematic Course Categories to customize your learning (15 credits). Finally, take the Concentration Courses which includes a research course (3 credits) and the Capstone course (3 credits) for a total of 30 credits.

**This degree plan does not include a license or an endorsement.**

**SPED Core Courses:** Choose 3 (9 credit hours)

- SPED 5000 - Universal Design for Learning (UDL)
- SPED 5010 - Intentional Interventions for Exceptional Learners
- SPED 5140 - Assessment: Inquiry, Instruction, & Intervention
- SPED 5151 - Slashing Stigmas: Promoting Positive Behaviors
- SPED 5300 - Family, Professional, and Community Collaboration
- SPED 5500 - Transition and Secondary Methods in Special Education
- SPED 5740 - Intersections of Literacy, Culture, & Exceptionality
- SPED 5780 - Literacy Intervention for Exceptional Learners

**Thematic Course Categories:** (15 credit hours)

In consultation and with approval from, your faculty advisor, select five courses from the Thematic Course Categories to customize your learning.

- Course 1
- Course 2
- Course 3
- Course 4
- Course 5

**Concentration Courses:** (6 credit hours)

- RSEM 5080 - Research In Schools

- SPED 5401 - Advanced Seminar in Special Education (Capstone Course)

## **Total Credit Hours 30**

### **Capstone Requirement**

SPED 5401 is the Special Education Capstone class, which fulfills the COMPS requirement for MA students. The intent of the Capstone is to help candidates synthesize learning through a final project that speaks to academic and professional development in the SPED Program. The capstone should tell the story of what was learned, specific areas of interest, and address ongoing barriers experienced in the field. Your Capstone requirements will be fulfilled by completion of SPED 5401.

### **Program Requirements and Courses**

To complete the SPED Education program and earn a master's degree, students must complete the appropriate course work as outlined. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

### **Course Scheduling**

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, three-to eight-week sessions are offered, and courses may be in the morning, afternoon or evening.

### **Planning**

For practicing full-time teachers, we recommend taking one course each fall and spring semester, and up to two courses each summer. Plan carefully because some courses are only offered once a year. Several courses have case study requirements with a K-12 student population. If you are not working in a school, you will consult with your instructor for an alternative assignment.

### **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0 (B average). Please refer to the Student Handbook for information on Academic Probation. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

# **MA in Special Education with Special Education Generalist (Ages 5-21) Endorsement**

The MA in Special Education with added Special Education Generalist endorsement is designed for currently licensed teachers seeking career advancement and the expertise needed to work effectively with students with special needs and from diverse backgrounds. The program is fully accredited by the Colorado Department of Education and the Council for Exceptional Children.

### **Special Education (21-24 credit hours)\*\***

- SPED 5030 - Understanding (dis)Ability in Contemporary Classrooms (waived if already completed)
- SPED 5300 - Family, Professional, and Community Collaboration
- SPED 5151 - Slashing Stigmas: Promoting Positive Behaviors
- SPED 5500 - Transition and Secondary Methods in Special Education
- SPED 5740 - Intersections of Literacy, Culture, & Exceptionality
- SPED 5780 - Literacy Intervention for Exceptional Learners
- SPED 5140 - Assessment: Inquiry, Instruction, & Intervention
- SPED 5010 - Intentional Interventions for Exceptional Learners
- Additional Courses as Necessary\*\*

### **Advanced Study (9 credit hours)**

- LDFS 6320 - Mind, Brain, and Education
- RSEM 5080 - Research In Schools **or** RSEM 5050 - Classroom Assessment
- SPED 5401 - Advanced Seminar in Special Education

### **Total Credit Hours 30-33**

\*\* Based on a comprehensive record review (i.e. teaching experience & classroom placements), SPED 5933: Internship & Site Seminar (Approximately 192 Hours or 24 days) may be required at the discretion of SPED program faculty.

### **Capstone Requirement**

SPED 5401 is the Special Education Capstone class, which fulfills the COMPS requirement for MA students. The intent of the Capstone is to help candidates synthesize learning through a final project that speaks to academic and professional development in the SPED Program. The capstone should tell the story of what was learned, specific areas of interest, and address ongoing barriers experienced in the field. Your Capstone requirements will be fulfilled by completion of SPED 5401.

### **Program Requirements and Courses**

To complete the SPED Education program and earn a master's degree and endorsement, students must complete the appropriate course work as outlined. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

### **Course Scheduling**

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in

various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, three-to eight-week sessions are offered, and courses may be in the morning, afternoon or evening.

### **Planning**

For practicing full-time teachers, we recommend taking one course each fall and spring semester, and up to two courses each summer. Plan carefully because some courses are only offered once a year. Several courses have case study requirements with a K-12 student population. If you are not working in a school, you will consult with your instructor for an alternative assignment.

### **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0 (B average). Please refer to the Student Handbook for information on Academic Probation. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

## **Management and Organization MS**

**Program Director:** Kenneth Bettenhausen, Jeffrey Nystrom

**Telephone:** 303-315-8425, 303-315-8407

**E-mail:** Kenneth.Bettenhausen@ucdenver.edu, Jeffrey.Nystrom@ucdenver.edu

The MS Management program prepares students for significant managerial responsibilities in the private and public sectors. Core course requirements provide students with an advanced understanding of how to manage interpersonal dynamics, effectively design organizations, implement planned change and organizational transformations and develop human resources. Students build on this foundation with any four electives in MGMT with the courses that comprise one of the career-focused specializations.

**The specializations include: business strategy and innovation, leadership and change management, managing for sustainability, and a self-directed option.**

The MS management and organization degree requirements are met by the following:

### **Required Core Courses (12 hours)**

- BUSN 6520 - Leading Individuals and Teams
- MGMT 6320 - Leading Organizational Change
- MGMT 6360 - Designing Effective Organizations
- MGMT 6380 - Managing People for Competitive Advantage

### **Specialization Options (18 hours)**

Business Strategy and Innovation

Leadership and Change Management

Managing for Sustainability

Self-Directed

## **Business Strategy and Innovation**

Select 3 courses from the list below, plus any 3 courses numbered 6000 or higher with a prefix of MGMT.

- MGMT 6610 - Business Strategy Lab **OR**
- MGMT 6825 - Sustainable Change Leadership: Turning Business Into a Force for Good
- MGMT 6620 Strategic Management (new course beginning fall 2020)
- MGMT 6804 - Bargaining and Negotiation
- ENTP 6020 - Business Model Development & Planning **OR**
- ENTP 6620 - New Venture Operations and Project Management
- INTB 6000 - Introduction to International Business

## **Leadership and Change Management**

Select 3 courses from the list below, plus any 3 courses numbered 6000 or higher with a prefix of MGMT.

- MGMT 6803 - Visionary Leadership
- MGMT 6804 - Bargaining and Negotiation
- MGMT 6808 - Leadership Development
- MGMT 6822 - Business Ethics and Corporate Social Responsibility
- MGMT 6610 - Business Strategy Lab **OR**
- MGMT 6825 - Sustainable Change Leadership: Turning Business Into a Force for Good

## **Managing for Sustainability**

Select 3 courses from the list below, plus any 3 courses numbered 6000 or higher with a prefix of MGMT.

- MGMT 6821 - Managing for Sustainability
- MGMT 6822 - Business Ethics and Corporate Social Responsibility
- MGMT 6825 - Sustainable Change Leadership: Turning Business Into a Force for Good
- MGMT 6826 - Business and the Natural Environment

- MGMT 6827 - Global Climate Change

## Self-Directed

If students do not wish to pursue a specific specialization within the Management degree, they may self-direct their course selections by choosing 18 hours (6 courses) from courses numbered 6000 or higher with a prefix of MGMT.

**Total: 30 hours**

# Marketing MS

**Program Director:** Vicki Lane

**Telephone:** 303-315-8468

**E-mail:** Vicki.Lane@ucdenver.edu

The MS in Marketing degree is designed to provide the skill sets necessary for you to succeed in Marketing Management careers. These positions include upper-level positions (e.g., Chief Marketing Officer), middle-level positions (e.g., Brand Manager, Advertising Account Executive) and positions for those who interface with an organization's markets (e.g., Marketing Analysts). Your MS in Marketing degree from the University of Colorado Denver consists of 10 courses as follows:

- Common Core - 7 courses (21 semester hours)
- Elective/Specialization Option - 3 courses (9 semester hours)

Everyone completes the same 7 common core courses and then can choose either three marketing electives with a MKTG prefix) or a Specialization option that consists of 3 courses. For the Specialization, you can choose from four "*Signature*" Specializations, three Cross-Over Specializations, or customize your program with three graduate marketing (MKTG) courses of your choice.

## Required Core Courses (21 hours)

- BUSN 6560 - Marketing Dynamics in the 21st Century
- MKTG 6010 - Marketing Strategy
- MKTG 6020 - Marketing Challenges at the Global Frontier
- MKTG 6040 - Services Marketing for Traditional and Creative Industries
- MKTG 6050 - Market Research Analytics I
- MKTG 6060 - Consumer Intelligence--Psychology and Behavior
- MKTG 6200 - Marketing Intelligence and Metrics



## **Marketing Electives or Specialization: (9 hours)**

Students may select any course numbered 6000 or higher with a **MKTG** prefix **OR** students may choose from the marketing specializations.

The specializations are areas of focus that will appeal to those who have specific interests or are looking to apply their marketing acumen in particular contexts (e.g., interface with engineering or work in a multinational or nonprofit environment).

The Signature Specializations include: Advanced Market Analytics in a Big Data World; Brand Communication in the Digital Era, Marketing Intelligence and Strategy in the 21st Century; and Sports and Entertainment Business( see special degree requirements).

The Cross-Over Specializations include: Global Marketing; High-Tech Entrepreneurial Marketing; and Marketing and Global Sustainability.

Courses required for each of the specializations are listed with the specific specializations below:

### **Advanced Market Analytics in a Big Data World**

Marketing and survey researchers gather information about what people think, measure customer satisfaction and repurchase intentions, help companies decide what goods and services to offer and at what price, and detect up-and-coming trends. Marketing researchers need good quantitative skills, strong analytical skills and a good understanding of marketing and buyer behavior. Many of our alumni got their starts in marketing research positions. According to the U.S. Bureau of Labor Statistics, employment is expected to grow faster than average with the best job opportunities for those with an MS marketing degree (Don't just take our word for it; check out <http://www.bls.gov/oco/ocos013.htm>).

- MKTG 6090 - Big Data Customer Relationship Management
  - MKTG 6051 - Market Research Analytics II
- Complete any one MKTG 6000 or higher course.

### **Brand Communication in the Digital Era**

Are you interested in a career in advertising, promotions or public relations? How about furthering your career in marketing management? Advertising, promotion and public relations managers are creative, highly-motivated individuals who are flexible yet can meet a deadline. They need good verbal and written communication skills and the ability to work well with people. Similar talents are needed by those involved with brand management. This task is central to all marketers, especially those involved with perceptual positioning and the deliverance of positions in a target market (e.g., those working in any phase of market communication and R&D) The U.S. Bureau of Labor Statistics reports that, because of the high

visibility of these positions, these managers are often prime candidates for top C-level positions. The job outlook remains promising but competition will be keen, and the best opportunities will go to those with an MS in marketing or an MS marketing /MBA dual degree. (Don't take our word for it, see <http://www.bls.gov/oco/ocos020.htm>).

**Required:**

- MKTG 6070 - Brand Identity & Marketing Communication Strategy
  - MKTG 6092 - Digital Media Marketing - Tools and Analytics
- Complete one MKTG 6000 or higher course.

## Global Marketing

One of the growing themes of the 21st century economy is the growth of world trade. There is continuing demand for individuals who understand the how to conduct marketing across many different international environments as well as rapidly growing areas such as China and the emerging markets. This specialization prepares you to effectively compete and succeed in this environment.

**Required Course:**

- ENTP 6826 - International Entrepreneurship
- Complete one of the following courses:
- INTB 6020 - Cross-Cultural Management
  - MKTG 6830 - Marketing & Global Sustainability
- Complete either one MKTG 6000 or higher course, one INTB 6000 or higher course, or one ENTP 6000 or higher course with a global focus.

## High-Tech/Entrepreneurial Marketing

The American economy was built on a spirit of innovation, hard work and entrepreneurship, and this is surely going to be the path that assures continued American dominance in the technology and business development fields. Most smart innovators know that, in addition to the financial and managerial aspects of a business, it is the marketing function that often makes the difference between success and failure. Whether your interest is in corporate intrapreneurship and the development of high-technology oriented innovations or individual entrepreneurship and the development of a small business with minimal funds, knowing how to create and implement appropriate marketing strategies is fundamental to achieving your goals. This specialization allows you to focus on the type of new business creation path that best suits your aspirations while greatly enhancing your endeavors probability of success. If you aspire to be the next Bill Gates, this is a "must take" degree path for you.

**Required:**

- ENTP 6842 - New Concept Development  
Complete one of the following courses:
- ENTP 6020 - Business Model Development & Planning
- ENTP 6620 - New Venture Operations and Project Management
- ENTP 6644 - Impactful Social Innovation
- ENTP 6801 - Building Biotechnology
- ENTP 6822 - Legal and Ethical Issues of Entrepreneurship
- ENTP 6826 - International Entrepreneurship  
Complete one MKTG 6000 or higher course.

## Marketing and Global Sustainability

The world has changed. More than ever, companies around the globe need to introduce smart, sustainable brands to lead the way into the future. The strong core of MS marketing courses will give you the skills to become an effective marketing manager, while the specialized set of sustainability courses will give you the knowledge to work toward a better tomorrow. The sustainability courses will focus on the triad of economic, environmental and social sustainable development.

### Required:

- MKTG 6830 - Marketing & Global Sustainability  
Complete one of the following courses:
- MGMT 6821 - Managing for Sustainability
- MGMT 6822 - Business Ethics and Corporate Social Responsibility
- MGMT 6826 - Business and the Natural Environment
- MGMT 6827 - Global Climate Change

## Marketing Intelligence and Strategy in the 21st Century

According to the Bureau of Labor, in 2015 the median salary for Marketing, Advertising, and Promotions Managers was \$124,850. This Specialization is designed to prepare students for these careers across various industries, whether services, products, global, or domestic. It provides a balance across strategy and intelligence. Skills, interests, and capabilities that are relevant include the following:

- Savvy in cultivating and maintaining business relationships
- Capacity to communicate effectively
- Interested in understanding how consumer psychology affects market success
- Fascinated with popular culture and its creation of market opportunities
- Captivated by the integration of branding with media, entertainment, and sports
- Intrigued by the "Internet of things" and how this is changing the relationships between organizations and consumers

- Focused on Creative approaches to business challenges
  - Ability to think "out-of-the-box" and generate new ideas to solve market problems
  - Knack for planning and organization
  - Skill in managing people and resources
- Complete the following required courses:
- MKTG 6070 - Brand Identity & Marketing Communication Strategy
  - MKTG 6090 - Big Data Customer Relationship Management
- Complete one MKTG 6000 or higher course.

## **Sports and Entertainment Business**

The sports business industry is one of the largest and fastest growing in the United States. Add to that the burgeoning music, film, theater, television, cable and other entertainment industries and you've got virtually limitless choices. Every one of those industries needs good marketers. The strong core of marketing courses in the MS marketing program will give you the skills you need to hit the ground running with the specialized courses to teach you how to tailor your skills to the unique needs of the sports and entertainment industries.

**If you pursue this specialization you must follow the course requirements listed below as this specialization has a unique degree plan.**

### **Business Applications in Sports and Entertainment**

#### **Required Course:**

- MKTG 6820 - Sports & Entertainment Marketing
- Complete four courses from the following list:**
- MKTG 5939 - Internship
  - MKTG 6040 - Services Marketing for Traditional and Creative Industries
  - MKTG 6822 - "Fan"tastical Consumers of American Sports and Entertainment
  - MKTG 6824 - Sales and Negotiation for Consumer, Services, Sports, and Entertainment Industries
  - MKTG 6826 - The Sports and Entertainment Industry
  - MKTG 6834 - Global Sports & Entertainment Management

### **Business Skills for Sports and Entertainment Managers**

#### **Required Course:**

- BUSN 6560 - Marketing Dynamics in the 21st Century
- Complete three courses from the following list:**
- MKTG 6010 - Marketing Strategy
  - MKTG 6050 - Market Research Analytics I
  - MKTG 6060 - Consumer Intelligence--Psychology and Behavior
  - MKTG 6070 - Brand Identity & Marketing Communication Strategy
  - MKTG 6090 - Big Data Customer Relationship Management

- MKTG 6092 - Digital Media Marketing - Tools and Analytics
- MKTG 6200 - Marketing Intelligence and Metrics
- MKTG 6800 - Topics in Marketing

#### **Marketing Elective**

**Complete one MKTG 6000 or higher course.**

## **Master in Business Administration for Executives, MBA**

**Program Director:** Nicholas Hamilton-Archer

**Telephone:** 303-623-1888 or 1-800-228-5778

The executive MBA program provides executive-level students with a broad, rigorous 21-month academic experience leading to the master of business administration degree. The program is designed for persons who hold managerial positions in the private and public sectors. It builds upon the knowledge and experience of these executives with a sophisticated, challenging curriculum that can be pursued simultaneously without career interruption.

The executive MBA program emphasizes strategic leadership; the organization in a complex, international environment; and the applied tools of management. Courses are taught through a variety of methods. Case studies, lectures and computer simulation are combined with research projects and other teaching methods to provide students with tools useful in their present positions and applicable to more advanced responsibilities as they progress in their management careers.

Each new session of the executive MBA program begins the last week of August. Classes meet for a full day, once a week, on alternating Fridays and Saturdays, making it possible for those who live outside the Denver area to participate.

Two courses are taken simultaneously throughout the program. The program is supplemented by an intensive orientation at the beginning and a two-day seminar at the conclusion of the first academic year. A second-year seminar is held at an international business center outside of North America.

## **Master of Arts in Culturally and Linguistically Diverse Education**

The MA in CLDE is a 30 credit hour MA path that provides students with the opportunity to personalize your coursework to your specific needs as a professional educator. Students take the required concentration core courses (9 credit hours). Then, in consultation and with

approval from your faculty advisor, students select 5 courses from the Thematic Course Categories list to customize their learning (15 credit hours). Finally, students take the required research course (3 credit hours) and then complete a Capstone course (3 credit hours), for a total of 30 credits. A current teaching license is not required.

**The Customizable degree plan does not include a license or an endorsement.**

**Foundation Courses** (choose 1) 3 credit hours

- CLDE 5010 - Foundations of Language & Culture in Education
- CLDE 5160 - History & Law of Bilingual & Immigrant Education

**Language and Linguistic courses** (choose 1) 3 credit hours

- CLDE 5030 - Language Development of Multilingual Learners: Advanced
- CLDE 5070 - Linguistic Analysis of English

**Pedagogy Courses** (choose 1) 3 credit hours

- CLDE 5820 - Teaching Multilingual Learners, Advanced
- CLDE 5825 - Methods of Content Teaching for Bilingual Learners
- CLDE 5050 - Assessment & Advocacy for Multilingual Learners

**Total Concentration Credits 9**

**Thematic Course Categories Credits** 15 credit hours

- Course 1
- Course 2
- Course 3
- Course 4
- Course 5

**Research Course** 3 credit hours

- CLDE 6912 - Teacher Inquiry in Multilingual Classrooms

**Capstone Course** 3 credit hours

- CLDE 5035 - Connecting Multilingual Theories to Practice

**COMPS** Culminating Experience: Final Reflection

**Total Credit Hours 30**

**Culminating Experience: Final Reflection**

The culminating experience project is required for the CLDE endorsement; it fulfills the comprehensive exam requirement for the master's degree and permits you to document your development over the course of your program. Culminating Experience Projects are reviewed by CLDE faculty members. The process is reviewed in every class as each of the Performance Based Assessments is completed in the classes, helping students to update their culminating experience projects throughout the program. For more culminating experience project

guidelines, visit the website at <https://education.ucdenver.edu/academic-services/student-resources/graduate/culturally-linguistically-diverse-education>

### **Program Requirements and Courses**

To complete the CLDE program and earn a master's degree students must complete the appropriate course work as outlined in the tables. All courses require a grade of B- or better to count to the MA and a 3.0 minimum GPA is required for graduation. If necessary, courses may be retaken for a better grade.

### **Course Scheduling**

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including face-to-face, hybrid, or online classes. In the summer semester, eight-week sessions are offered, and courses may be in the morning, afternoon or evening, hybrid, or completely online.

### **Planning**

For practicing full-time teachers, we recommend taking one course each fall and spring semester and up to two courses each summer. Some courses are offered only once per year.

### **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

# **Master of Arts in Culturally and Linguistically Diverse Education with K-12 Endorsement**

Recommendations for endorsements are made by the CLDE program, but endorsement is granted by the State of Colorado. Individual state requirements vary and may include teaching experience and examinations in addition to a valid teaching credential. Students should consult with the Colorado Department of Education <http://www.cde.state.co>. or another state in which they wish to be endorsed for the most updated endorsement requirements.

### **Courses: All Required**

- CLDE 5010 - Foundations of Language & Culture in Education
- CLDE 5160 - History & Law of Bilingual & Immigrant Education
- CLDE 5070 - Linguistic Analysis of English
- CLDE 5030 - Language Development of Multilingual Learners: Advanced

- CLDE 5820 - Teaching Multilingual Learners, Advanced
- CLDE 5050 - Assessment & Advocacy for Multilingual Learners
- CLDE 5825 - Methods of Content Teaching for Bilingual Learners (Some district partnership courses may substitute here. Contact your Faculty Advisor for approval.)
- Elective with Faculty Advisor approval
- CLDE 6912 - Teacher Inquiry in Multilingual Classrooms
- CLDE 5035 - Connecting Multilingual Theories to Practice

Culminating Experience: Final Reflection

## **Total Credit Hours 30**

### **Culminating Experience: Final Reflection**

The culminating experience project is required for the CLDE endorsement; it counts as the comprehensive exam for the master's degree and permits you to document your development over the course of your program. Culminating Experience Projects are reviewed by CLDE faculty members. The process is reviewed in every class as each of the PBAs is completed in the classes, helping students to update their culminating experience projects throughout the program. For more culminating experience project guidelines, visit the website at <https://education.ucdenver.edu/academic-services/student-resources/graduate/culturally-linguistically-diverse-education>

### **Program Requirements and Courses**

To complete the CLDE program and earn a master's degree with endorsement, students must complete the appropriate course work as outlined in the tables. All courses require a grade of B- or better to count to the MA or endorsement and a 3.0 minimum GPA is required for graduation. If necessary, courses may be retaken for a better grade.

### **Course Scheduling**

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, eight-week sessions are offered, and courses may be in the morning, afternoon or evening, hybrid, or completely online.

### **Planning**

For practicing full-time teachers, we recommend taking one course each fall and spring semester and up to two courses each summer. Some courses are offered only once per year.

### **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.



# Master of Arts in Teaching

Return to: School of Education & Human Development

Lawrence Street Center, 701  
Campus Box 106  
P.O. Box 173364  
Denver, CO 80217-3364

**Telephone:** 303-315-6300

**Fax:** 303-315-6311

**E-mail:** [education@ucdenver.edu](mailto:education@ucdenver.edu)

**Website:** [www.ucdenver.edu/education](http://www.ucdenver.edu/education)

## Graduate Teacher Education Program Overview

The Graduate Teacher Education program culminates in a Master of Arts in Teaching and an initial teacher license. The program prepares educators who are culturally affirming and responsive, collaborate closely with families and communities, and have the knowledge and skills to create engaging, relevant, and rigorous classroom communities where all students can achieve and grow. We work alongside our P-12 partner educators throughout the CU Denver Professional Development School Network comprised of over 20 urban schools across numerous districts in the Denver metro region. Teacher education students live the life of a teacher for an entire academic year while enrolled in the program through a series of residency internships in a professional development school. Ultimately our goal is that all teacher candidates-whether their emphasis is elementary, secondary, or special education- have the unique knowledge and skills to positively impact urban and diverse schools and act with a sense of urgency to support equity in education for all children. The Graduate Teacher Education Program is a nationally accredited program that exceeds expectations.

## Education Pathways

The graduate teacher education program at CU Denver is designed to allow individuals with a minimum of a bachelor's degree to seek a master's degree along with an initial Colorado teacher's license in the following areas:

- **Elementary Education (K-6)** (54 semester hours)
- **Secondary Education (7-12)** (39 semester hours)
  - English
  - Mathematics
  - Science (General Science, Biology, Earth Science, Physics, Chemistry)
  - Social Studies

- World Language (K-12) (Spanish, French)
- **Middle School Math** (6-8) (39 semester hours)
- **Special Education Generalist** (Ages 5-21) (54 semester hours)
- **Dual General Education/Special Education** (63-72 semester hours)

## **Program Structure**

The program admits teacher candidates in cohort groups that begin either in the summer or fall. The cohort model provides a unique learning community for candidates and engenders significant support for success. The program includes full time 1 - 1.5 year licensure plans for regular education and a 1.5 - 2 year full-time option for initial special education and dual special education. Students enroll in course work at the university and clinical internships in one of CU Denver's professional development schools throughout the program. By enrolling in several courses and internships together, elementary, secondary, and special education teacher candidates are well prepared to support K-12 students with a wide range of diverse needs.

## **Clinical Experience in Professional Development Schools**

While in the program, teacher candidates intern in a professional development school for an entire academic year, gradually beginning with two days a week early on and increasing over time to five days per week by the end of the program. University courses are closely integrated with the sequence of clinical internship experiences providing teacher candidates with multiple opportunities to engage in the authentic work of teachers. Teacher candidates co-teach closely with practicing teachers in the school and gradually assume full responsibility for teaching by the end of the program. Elementary teacher candidates generally spend an entire academic year in a single partner elementary school, whereas secondary teacher candidates spend their internships in one of the partner middle schools and one of the partner high schools. Special education teacher candidates complete internships at multiple levels, P-12 due to the wide-span of their license that enables them to support students with special needs ages 5-21. The schools are located in several Denver metropolitan districts serving large populations of low-income and/or minority students, as well as a sizeable number of students for whom English is a second language as well as students with special needs. Each school is supported by a site professor from the university one day per week and by a master teacher, called a site coordinator, who supports teacher candidates through their academic year of internships.

## **Assessment**

Both the coursework and the internship experiences have been created to align with the Colorado Teacher Quality Standards, as well as frameworks for culturally and linguistically responsive instruction and Universal Design for Learning. Students in all programs engage in a common set of learning opportunities and internship assessments. They also engage in Program Level Assessments at different stages of the program. Colorado mandates that all teacher

education programs be "performance-based" in order to recommend candidates completing the program for licensure; thus all candidates in the Urban Community Teacher Education program must demonstrate proficiency in both the university-based coursework and their internships.

## Programs of Study

Due to the complex nature of teacher preparation that is governed by state and national accreditation and legislative mandates that can change from year to year, please see current programs of study in the teacher education handbook.

## Requirements for Admission

**Admission Deadline:** February 15 for summer and April 1 for fall start dates.

### Graduate Teacher Education Admission Requirements

Competitive undergraduate cumulative GPA of 3.0 (Students with a lower GPA may be considered under certain conditions. Please see SEHD website.)

- Completion of any outstanding prerequisite content courses that are needed per a transcript evaluation. Consult with your advisor to create a plan for completing these requirements. Submit your unofficial transcript for an evaluation.
- A complete application which can be obtained online at <http://www.ucdenver.edu/academics/colleges/SchoolOfEducation/Apply/Licenses/Pages/GraduateTeacherEducation.aspx> which includes transcripts, essays, recommendations, and an interview.
- **Attend an admissions interview.** All individuals who submit a COMPLETE application will receive an email with the interview invitation that contains all details approximately one week before the scheduled interview. During this group interview, prospective students participate in highly interactive group discussions and activities to further assess each applicant's readiness as well as aid in internship placement.

## Master of Science in Education in Mathematics Education MEd

The MEd in mathematics education integrates educators' learning of mathematical content, pedagogy, and research. This approach fosters educators' ability to teach effectively at the K-12 level. The program arises from collaboration between the School of Education and Human Development (SEHD) and the Department of Mathematical and Statistical Sciences in the

College of Liberal Arts and Sciences (CLAS). It interweaves both mathematical and educational understandings that lead to a truly interdisciplinary program, including a possibility to conduct one's own research project.

The MEd core courses provide a sound basis in mathematics education, including learning theories and progressions, teaching approaches, and deep appreciation for diversity and philosophical foundations.

### **MEd Core - 15 credit hours**

- MTED 5030 - Theories Of Mathematics Learning
- MTED 5040 - Mathematics Teaching - Theory and Practice
- MTED 5050 - Critique Of Mathematics Education Research
- MTED 5060 - Developmental Pathways In Students' Mathematical Thinking

### **Plus**

RSEM 5080 - Research In Schools or RSEM 5120 - Introduction to Research Methods

### **Mathematics Core - 9 credit hours**

**Required Mathematics Core** - Choose three courses in consultation with faculty advisor. Students may select 5000-level MATH, MCKE, MTED, or RSEM courses relevant to the grade-level with which the teacher works with approval from faculty advisor. (Note: Several mathematical content courses are taught by the mathematics education faculty.)

### **Plus**

### **Optional Course work**

**Thesis Option** (if chosen): SCED 5950 - Master's Thesis. **6 credit hours** required for this option.

or

**Non-Thesis Option: Elective Courses** - Choose two courses relevant to the grade-level with which the teacher works in consultation with a faculty advisor. **6 credit hours**

### **MEd Total: 30 Hours**

### **Program Requirements and Courses**

To complete the MEd program and earn a master's degree, students must complete the appropriate course work as outlined above. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

### **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

# MBA/MS in Bioengineering

The Business School and the Department of Bioengineering offer this degree option for students admitted into the Bioengineering MS program and the MBA program. This dual degree is an excellent opportunity for students who are planning a career in industry or as an entrepreneur. Bioengineering students including those who create medical devices, often launch their own venture upon graduation or thereafter. Business skills, especially in the area of marketing, legal environments, finance and operations are critical to enhance the probability of venture success. A dual degree also opens up new doors with regard to career choice, either in business or in one's core field.

## Mechanical Engineering MEng

► Graduate School Policies and Procedures apply to this program

The master's of engineering (MEng) is an interdisciplinary degree program designed to meet the needs of those practicing engineers who wish to follow an integrated program of studies in engineering and allied subjects related to the individual student's professional work. Students can combine advanced engineering course work with graduate-level non-engineering courses such as business administration, environmental sciences, social sciences, biological sciences or public administration. There are also tracks in biomechanics and sports engineering.

Prospective students are required to present a well-defined objective in order to be admitted to the program. In consultation with faculty advisors, an academic program is developed to meet this objective.

An advisory committee will be appointed for each student by the department. The advisory committee that guides the student is responsible for approving the individual's degree program and admission to candidacy, and approves the student's written report and the awarding of the degree.

The requirements for admission are the same as those for the MS degree awarded through the College of Engineering, Design and Computing. A minimum of 30 semester hours of academic work is required for the MEng degree. At least 15 of these hours must be at the 5000 level or above in mechanical engineering. A maximum of 12 semester hours may be taken outside of engineering. In addition to course work, a written report is required in the MEng program as a final project (3 semester hours). The report may be related to the student's professional work. The report will be of the same general quality as that required for the master of science thesis and must be defended orally. It may be based on work done for credit under independent study.

## Mechanical Engineering MS

► Graduate School Policies and Procedures apply to this program

## Program Plans

For the master of science (MS) degree in mechanical engineering, students may choose between three plans with each plan totaling 30 semester hours.

- Plan I - Students following Plan I (thesis option) take 24 semester hours of formal course work plus 6 semester hours of thesis work.
- Plan II - Students following Plan II (project option) take 27 semester hours of formal course work plus a 3 semester hour final project requiring a report.
- Plan III - Students following Plan III (10-course option) take 30 semester hours of formal course work plus a final comprehensive exam.

Students following Plan I or Plan II must submit a proposal to their examination committee prior to the semester in which they register for their thesis or project semester hours, and the examination committee must approve the proposal for the thesis or project.

## Program Options

Students in each of the plans may choose one of four options. In the first three options, the student may choose to specialize in thermal science, mechanics or biomechanics. The fourth option is the general mechanical engineering option.

- The **thermal science option** requires 12 semester hours of course work in analytical methods, numerical methods, fluid mechanics and thermodynamics. The student then selects 9 semester hours of course work in approved electives from a selection of thermal science electives.
- The **mechanics option** requires 12 semester hours of course work in analytical methods, numerical methods, elasticity and dynamics. The student then selects 9 semester hours of course work in approved electives from a selection of mechanics electives.
- The **biomechanics option** requires 31 credit hours to graduate. Please contact the mechanical engineering department or visit the biomechanics website for more information.
- The **general mechanical engineering option** requires the student to take 18 semester hours of required course work in analytical methods, numerical methods, fluid mechanics, thermodynamics, elasticity and dynamics.

After meeting the course requirements for any of the four options the student may select any mechanical engineering graduate course to complete the credit-hour requirements. The student may also take courses approved by an advisor outside of the mechanical engineering department.

# Media Forensics Emphasis, Recording Arts MS

► Graduate School Policies and Procedures apply to this program.

Please click [here](#) to see general Music & Entertainment Industry Studies information.

## Program Overview

The Master of Science in Recording Arts emphasis in media forensics (MSRA-MF) prepares students from various backgrounds for work in the field of forensic audio, video and image analysis, utilizing state-of-the-art methods and technology necessary to fight crime in the digital age. Housed in the National Center for Media Forensics (NCMF), this program is unique in providing a hybrid format (online and onsite) graduate education in forensic multimedia analysis.

Students from related disciplines (media production, electrical engineering, forensics, computer science, etc.) are encouraged to apply, as this program enhances scientific inquiry while guiding students through a two-year cohort curriculum. The hybrid delivery format affords students the ability to work full-time while completing most of the program online with additional onsite study at the NCMF and its partner institutions. Classes are comprised of online self-guided lectures, interactive learning, discussion boards, reading responses and scheduled video conferencing. Onsite course work provides students with hands-on and practical experiences which augment and enrich the curriculum. Additionally, experiential learning activities include visits to regional crime labs and scientific conferences to understand the application of forensic media technology and laboratory procedures.

Courses lead students through three areas of study: foundational knowledge, core analyses and capstone experiences, which fully prepare students for research in forensic science and expert witness testimony. Digital media evidence acquisition through computer forensics applications is emphasized in an environment that fosters creativity and individual skills. The research thesis on a topic of the student's choosing is conducted under the advisement of the director and associate director of the NCMF with input from forensic professionals from around the world. The thesis is a topic of exploration throughout the program and serves to enhance a graduate's area of specialty as they prepare for work in private forensic practice, corporate research and development, academic research and teaching, or crime labs at the local, state and federal levels.

## Curriculum

The MSRA-MF program comprises 33 semester hours of credit: 29 hours are required courses and 4 hours are thesis. All courses must be completed with a grade of B- (2.7) or better and

students must maintain at least a 3.0 cumulative GPA. Grades of C+ (2.3) or lower, or a cumulative GPA below 3.0, will result in the student's dismissal from the program. Students are admitted to the program in the fall as a cohort and must follow the curriculum in sequence.

## **MSRA Media Forensics Application**

Admission to the MSRA-MF program is competitive. The MSRA-MF program accepts students in the fall only. Admission decisions are made by committee and are based on the entirety of the applicant's submitted materials. Admission to the program is contingent upon:

- Formal documentation of an earned bachelor's degree in a related field. (International students must document an equivalent.) Undergraduate degrees from other disciplines will be considered with proper support from application components.
- Successful completion of the Graduate Record Exam (GRE) General Test.
- For international students, submission of proof of English Language Proficiency. Please contact the Office of International Admissions for more information.
- Strength of application components as they relate to:
  - Scientific competency
  - Writing skills
  - Desire to work in the field of forensic media analysis
  - Strength of academic/professional background
  - Strength of references through letters of recommendation

### *Application Components*

Required application components include:

- Graduate Application for Admission
- Application Fee
- Entrance Examinations: GRE (and TOEFL/IELTS or other evidence of English proficiency, if applicable)
- Official Transcripts
- Cover Letter
- Resume
- Three (3) Letters of Recommendation
- Two (2) Technical Writing Samples

**Applications that do not include all of the requirements or that include partial components are considered incomplete and will not be reviewed.**

International applicants are encouraged to visit the Office of International Admissions website for detailed information.



Application requirements are subject to change. Refer to the National Center for Media Forensics MSRA-MF program website for detailed information and updates regarding the application process and requirements.

## **Program Sequence**

### *Fall - Year 1*

MSRA 5014 - Research Practices in Media Forensics

MSRA 5124 - Forensic Science and Litigation

### *Spring - Year 1*

MSRA 5054 - Experiential Lab

MSRA 5114 - Foundations in Media Forensics

MSRA 5144 - MATLAB Foundations

### *Summer - Year 1*

MSRA 5134 - Computer Forensics

MSRA 5244 - Mobile Phone Forensics

### *Fall - Year 2*

MSRA 5054 - Experiential Lab

MSRA 5214 - Forensic Audio Analysis

MSRA 5254 - MATLAB for Forensic Audio Analysis

### *Spring - Year 2*

MSRA 5054 - Experiential Lab

MSRA 5224 - Forensic Video and Image Analysis

MSRA 5264 - MATLAB for Forensic Video and Image Analysis

### *Summer - Year 2*

MSRA 5314 - Report Writing and Court Testimony

### *Summer - Year 2 (or later)*

MSRA 6954 - Research Thesis in Media Forensics

**Total: 33 Semester Hours**

# **New Directions in Public, Non-Profit and Community Leadership, Political Science MA**

► Graduate School Policies and Procedures apply to this program.

**Director:** Minsun Ji

**E-mail:** minsun.ji@ucdenver.edu

The Public, Non-profit and Community Leadership track of the political science MA program is offered off-campus through the Center for New Directions at CU Denver South in Parker, CO. The Center for New Directions offers an MA program focused on public leadership, community labor organizing, and social economy innovations, in collaboration with community and labor organizations and local government jurisdictions across Colorado. The program seeks to develop the public leadership & community organizing capacities necessary to address challenges and leadership & community organizing capacities necessary to address challenges and opportunities within neighborhoods, communities, government jurisdictions, and non-profit entities.

In addition to their standard coursework, students in this Masters program are encouraged to be involved in experiential learning through professional internships, community-based action research opportunities, and other practicums made available to students through the program's many university-community partnerships, including the possibility of full-time, salaried internships with rural and small jurisdictions across Colorado. Through partnerships with government jurisdictions across the state, and with non-profits and community-based organizations, New Directions seeks to build community power and identify policy solutions to local challenges.

This program presents courses in an intensive weekend format, allowing students to complete their masters entirely through weekend or online courses.

## **Degree Requirements**

1. Students must complete a total of 33 PSCI graduate credit hours to complete the MA degree.
2. Students must earn a minimum grade of B- (2.7) in all masters courses taken at CU Denver and must achieve a minimum cumulative masters GPA of 3.0. All graded

attempts in required and elective courses are calculated in the masters GPA. Students cannot complete the masters or ancillary course requirements as pass/fail.

## Required Core Courses

- PSCI 5914 - Community Organizing and Community Development
- PSCI 5468 - Research Methods in Political Science
- PSCI 5960 - Master's Project

**Total: 9 Hours**

## Electives

In addition to the required core courses, students must take 24 credit hours of political science electives.

[*Note:* Previously earned graduate credit may be submitted for approval to satisfy up to nine hours of the supportive elective requirement. The elective courses offered may change from time to time based on needs, interests and other factors.]

Elective courses in the New Directions program are offered in three different "tracks" of study, allowing students to choose their particular interest and focus their studies on that subject. The three tracks are: Local Governance, Community and Labor Organizing, and The Social Economy and Sustainable Development.

Students are encouraged to focus their studies by taking courses within a chosen track, but it is *not* required that students only take courses within a single track (and some courses fit in more than one track).

1. **Local Governance:** Curriculum focuses on educating students who are interested in working in local and state government sectors, or with public policy research and advocacy organizations. Curriculum and community partnerships in this area focus on local government and administration, the politics of government finance, state politics and public policy challenges.
2. **Community and Labor Organizing:** Curriculum focuses on developing diverse theoretical and practical courses in labor and community organizing politics, history and strategies. Courses focus on social movement theories, labor union politics, and community organizing strategies to help students develop theoretical foundations and practical strategies for more effective community and labor leadership.
3. **The Social Economy and Sustainable Development:** Curriculum focuses on developing an understanding of the current political-economic systems, and on exploring alternative and diverse economic strategies that might work to the benefit of

less privileged communities. Courses and community partnerships allow students to explore democratic financial systems, land trusts, and worker cooperatives, and other such innovative "social economy" practices, at the local, national and global levels. In this track, students will learn of diverse economies theory, innovative economic development strategies in both rural and urban areas, the worker cooperative movement, and innovative financial strategies that work for less privileged communities.

Below is a list of some regularly offered elective courses in the New Directions program. All courses in our graduate catalog are available to be offered as electives in the New Directions program.

- PSCI 5545 - Immigration Politics
- PSCI 5548 - Labor Law and Collective Bargaining
- PSCI 5354 - Seminar: Environmental Politics and Policy
- PSCI 5424 - The Social Economy and Sustainable Development
- PSCI 5434 - The Cooperative Movement: Politics and Policy
- PSCI 5457 - Seminar: American Political Thought
- PSCI 5265 - Social Justice And Globalization
- PSCI 5274 - Conflict Resolution and Public Consent Building
- PSCI 5206 - Social Movements, Democracy and Global Politics
- PSCI 5014 - Seminar: American Politics
- PSCI 5024 - State Politics: Focus on Colorado
- PSCI 5075 - Gentrification and Social Equity
- PSCI 5084 - Local Government and Administration
- PSCI 5085 - Comparative Governance: Environment and Society
- PSCI 5009 - Politics of the Budgetary Process
- PSCI 5414 - Non-Profits and Social Change

**Total: 24 Hours**

## **Project Requirement**

All students are required to complete a 3-credit master's project under the direction of a faculty advisor. Registration is done using the Special Processing form, rather than online.

- PSCI 5960 - Master's Project

**Total: 3 Hours**

## **Course Format**

All courses are offered in a weekend format that consists of three weekend sessions for a given course, spread out over a two or three month period. Weekend classes are held from 9:00 am to 4:00 pm on both Saturday and Sunday of each weekend session. In most cases, a student will complete all of the weekend sessions of one course before starting the weekend sessions for the next course. There is typically a two to three week break between each weekend of class-time in a given course.

## **Major Total: 33 Hours**

## **Certificate Program**

The Center for New Directions MA program offers two certificate programs:

- Public, Non-Profit and Community Leadership
- Labor Leadership Certificate

These certificate programs allow students to focus their studies in a particular direction and to note that particular focus on their transcript. Students do not have to be seeking a full Master's degree to earn a certificate of completion through the certificate program.

For more information on these graduate certificates, click the links above.

# **Political Science MA**

► Graduate School Policies and Procedures apply to this program

**Director:** Michael Berry

**E-mail:** michael.berry@ucdenver.edu

## **Introduction**

The Political Science Department offers a Master of Arts (MA) degree in Political Science with an emphasis on building academic and practical skills in key areas of the discipline. Research and teaching in the department centers on the major fields of American politics, comparative politics, international relations, political theory and public policy. The department also offers more specialized training in community organizing, human rights, legal studies, gender politics, race and ethnic politics, European studies, indigenous politics and urban politics. Students pursuing the MA have the option of completing the traditional track or an "alternative" track centered on public, non-profit and community leadership. Students completing the alternative "public, non-profit and community leadership" track take most courses on weekend, off-campus locations. Students completing either track have gone on to PhD programs across the country and work in a variety of areas, including: state and local elected office, government

service, community organizing and development work, nongovernmental organizations, legislative analysts, UN affiliates, lobbyists, teachers, media analysis and political consulting.

## Requirements for Admission

Students applying for admission to the MA program in political science should present at least 18 semester hours of previous academic work in political science, at least 9 hours of which should be at the upper-division or graduate level. The department may make exceptions to these requirements in unusual cases (for instance, if course work in related fields such as psychology, economics and history compensates for the deficiencies in political science). Applicants should present an undergraduate GPA of at least 3.0 to be considered. In their applications, students must submit transcripts and letters of recommendation (from academic sources) as specified by the Graduate School. In addition, applicants must submit a statement of academic objectives and an academic writing sample. Standardized test scores are not required of applicants, but will be considered if submitted. Program applicants who face difficulties in meeting these requirements should reach out for individual discussion with our Graduate Program director (for example, if an undergraduate GPA is below 3.0, or if letters of recommendation from professors taken years ago are hard to obtain).

In order to take graduate courses in political science, students must either be admitted to the MA program or secure permission to take courses as a non-degree student. Non-degree students interested in our certificate programs or in taking graduate courses for any reason should reach out to the Department Graduate Advisor to secure admission to courses as a non-degree seeking student.

## Program Requirement Overview

1. Students must complete 33 credit hours.
2. Students must earn a minimum grade of B-(2.7) in all masters courses taken at CU Denver and must achieve a minimum cumulative masters GPA of 3.0. All graded attempts in required and elective courses are calculated in the masters GPA. Students cannot complete masters or ancillary course requirements as pass/fail.
3. Students must complete a minimum of 16 credits with CU Denver Political Science faculty.
4. Students who are on probation must meet regularly with the graduate advisor and must secure approval from the advisor for all course work while on probation.

## Degree Requirements

In addition to the requirements for admission and details of the program spelled out here, graduate students in political science must also abide by department rules and procedures

specified in the Graduate School Policies and Procedures. Failure to meet these policies may result in a student being dropped from the program.

Under the On-Campus MA program in political science, two degree plans are available:

- Plan I requires the completion of nine graduate courses (27 semester hours) and a 6-credit thesis
- Plan II requires the completion of ten graduate courses (30 semester hours) and a 3-credit project or portfolio.

## **Required Core Classes**

Course work in both plans completed under the traditional track offered on the Downtown Campus must include the following two courses

- PSCI 5000 - State of the Discipline
- PSCI 5468 - Research Methods in Political Science

## **Elective Courses**

Students will complete between 12 and 15 elective semester hours, depending on whether they are working under Plan I or II. Elective courses must include at least one graduate seminar in each of the following three areas: 1) American politics, 2) Comparative politics/International Relations, and 3) Political Theory. Please see the Department graduate director, if you have questions as to which category a course might fit under.

In addition to taking regularly offered graduate seminars in the program, students may meet their elective requirements by taking independent study, internships, or graduate courses in related disciplines. These courses all require approval from the Graduate program director, or from a sponsoring faculty member in the Department. The total combination of independent study, graduate course work in related disciplines and internships cannot exceed 9 semester hours.

## **Alternative Political Science Masters Program: The New Directions Program**

In addition to its traditional, on-campus Masters degree, the Political Science Department offers a Public, Non-Profit and Community Leadership MA program through the Center for New Directions at CU Denver South in Parker, CO. The Center for New Directions offers an MA program focused on public leadership, community labor organizing, and social economy innovations, in collaboration with community and labor organizations and local government jurisdictions across Colorado. The program seeks to develop the public leadership & community organizing capacities necessary to address

challenges and leadership & community organizing capacities necessary to address challenges and opportunities within neighborhoods, communities, government jurisdictions, and non-profit entities.

Plan II is available both under the traditional MA track offered on the Denver campus, as well as through an alternative track offered off-campus through the Center for New Directions in Politics and Public Policy. For details about this off-campus track in politics and public policy, see New Directions, MA in Political Science.

The Political Science graduate program offers three transcribed certificates, allowing students to focus their studies in a particular direction and to note that particular focus on their transcript. Students do not have to be seeking a full Master's degree to earn a certificate of completion through the certificate program.

- Public, Non-Profit and Community Leadership
- Labor Leadership

For more information on these graduate certificates, click the links above.

# Public Administration, MPA

## Introduction

The Master of Public Administration degree (MPA) provides graduate professional education for students interested in public service leadership positions and careers with public and nonprofit agencies and organizations. The program serves students new to public service as well as those already in the field who are interested in furthering their careers.

To learn more about our renowned faculty, please visit our website to view our faculty bios.

**Program Director:** Jane Hansberry, PhD

The School of Public Affairs offers three distinct ways to complete an MPA degree:

- Accelerated MPA
- Executive MPA
- Traditional MPA

Students may also choose to designate a concentration within one of the optional focus areas or complete the MPA without a specified concentration.

## Program Delivery

- Courses are offered on campus, online, and in hybrid formats. The Accelerated MPA is only offered on campus in a cohort model



## Program Requirements

- Students must successfully complete 36 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.
- Students must earn at least a B- in all core coursework and at least a C in all elective coursework to be accepted for graduate credit towards the degree.
- No more than 6 credit hours of Independent Study may be applied toward the degree.
- Students who have not had at least one year of professional work experience in the public or nonprofit sectors must complete an internship through an additional 3-semester-hour course, bringing their total semester-hour requirements to 39.
- This program must be completed within 7 years.

All MPA students (with the exception of those in the executive MPA option) must complete the following seven core courses or approved equivalents, for a total of 21 credit hours.

- PUAD 5001 - Introduction to Public Administration and Public Service
- PUAD 5002 - Organizational Management and Behavior
- PUAD 5003 - Research and Analytic Methods
- PUAD 5004 - Economics and Public Finance \*Students in the Local Government Concentration must take PUAD 5503
- PUAD 5005 - The Policy Process and Democracy
- PUAD 5006 - Public Service Leadership and Ethics
- PUAD 5008 - Evidence-Based Decision-Making

Students must complete **four** elective courses from a pre-approved list and/or with approval from the program director.

Internship: Students who have limited experience (generally defined as less than one year of experience) in public, nonprofit or relevant private-sector service must enroll in PUAD 6910, Internship in Public Administration. The decision to require PUAD 6910 for a particular student is made by the faculty admissions committee or the student's faculty advisor upon the student's acceptance to the MPA program. A minimum of 300 hours of supervised work and study is required to earn the 3.00 credit hours for this course. The internship requirement raises the total credit hours needed to earn the MPA degree from 36 to 39.

- PUAD 6910 - Internship

Students must complete **one** of the following:

- PUAD 5361 - Capstone Seminar (during the final semester)

- PUAD 6950 - Master's Thesis (taken for 3 or 6 credits with approval by and in consultation with the program director prior to enrolling in the course)

## **MPA Options**

In addition to the traditional MPA program, students may consider the accelerated and executive options.

### **Accelerated MPA**

The Accelerated MPA (AMPA) is a fast-paced, full-time option that brings academically superior students together with a dedicated research and teaching faculty in the midst of the vibrant downtown Denver environment. The students in the cohort enjoy a unique experience as they go through all classes in the MPA together, fostering a community of scholar-practitioners.

The Accelerated MPA enables students to focus their energies in a concentrated program of study and earn a nationally accredited, 36-hour MPA in 12 months. All coursework is completed in-person as a cohort. The online option is not available for the AMPA program.

Students are admitted to the program in cohorts of up to 20 participants. A new cohort starts each August. The cohort format helps to increase the opportunity to become acquainted with other graduate students and increases the opportunities for interaction between program participants and faculty. It is preferred that applicants have some knowledge of economics, statistics and political science prior to starting the program, although no required.

This program is priced at a flat rate, regardless of in-state or out-of-state student status, providing out-of-state students with substantial savings.

Students interested in pursuing the Accelerated MPA program should designate this as their desired program on their Admissions application.

### **Executive MPA**

The Executive MPA program is designed for senior level professionals in the nonprofit and public sectors. The Executive MPA requires 30 credit hours to complete the degree.

### **Initial Leadership Experience (3 Hours)**

All students will enroll in the Rocky Mountain Leadership Program (RMLP) which is a six-day seminar typically held in Breckenridge. The RMLP brings together public and non-profit professionals from across the country to collaborate on current management issues while honing leadership skills. Federal employees may elect OPM's federal Management Assessment Seminar at either the Western or Eastern Management Development Centers in lieu of the

Rocky Mountain Leadership Program. For more information about the OPM program option please see [www.leadership.opm.gov](http://www.leadership.opm.gov).

## **Coursework**

### **Required courses (15 Hours)**

All students will complete PUAD 5001 and PUAD 5002 together as an Executive cohort. Both courses are held in a hybrid format, which combines a one-week intensive session on the Denver campus with additional online instruction. Students will also complete two additional core courses (6 total credits) from the regular MPA core. The remainder of the core courses may be taken in the student's preferred format as either online, weekend intensive or through the traditional campus-based classroom setting.

All Executive students will complete PUAD 5361, Capstone Seminar (3 credits) at the end of their program. The Capstone allows students to synthesize the information learned during the program and put it into practice within their professional setting.

### **Electives (12 Hours)**

In consultation with an advisor, students select four additional elective courses that best meet their professional goals. These may be taken online or in the classroom. Students may complete up to 9 credits through the federal OPM Management Development Center provided they are approved for graduate credit by the American Council on Education.

## **Optional Concentrations**

Students may select one of the concentrations below or complete the MPA without a specified concentration. Students completing a concentration take their electives in the area of their concentration, complete the advanced seminar project in the area of their concentration and are advised by faculty from the concentration.

All MPA concentrations require a total of 12 credits hours of concentrated elective coursework and may either be taken as part of the MPA program or as a stand-alone Graduate Certificate.

## **Disasters, Hazards and Emergency Management Concentration**

The concentration in Disasters, Hazards, and Emergency Management (DHEM) provides advanced education in the management of emergencies, hazards, disasters, and community resilience. DHEM is designed for students who work or will work in the field of natural and man-made hazards, community resilience, and emergency management.

### **Required Coursework**

The DHEM concentration requires a total of 12 credit hours.

Students must complete the following course:

- CRJU 5720 - Public Policies for Hazards and Disasters

Students must complete at least **one** of the courses below:

- CRJU 5650 - Public Service in Emergency Management and Homeland Security
- CRJU 5655 - Principles of Emergency Management
- URPL 6645 - Disaster/ClimateChangePlanning

Students must complete **two** pre-approved elective courses. For a list of pre-approved electives, please consult your Academic Advisor.

**Total: 12 Hours**

## Education Policy Concentration

The concentration in Education Policy provides students with an understanding of how K-12 education is governed, financed and regulated in the United States. Students will become familiar with the interaction between federal, state and local policies and with the context in which education policy is formulated and implemented.

### Required Coursework

The Education Policy concentration requires a total of 12 credit hours.

Students must complete the following courses:

- PUAD 5200 - Education Policy
- PUAD 5210 - Education Finance

Students must complete **two** additional elective courses from the list below or select unlisted courses that have been approved in advance by the program director.

- PUAD 5180 - Social Entrepreneurship
- PUAD 5310 - Policy Formulation & Implementation
- PUAD 5320 - Public Policy Analysis
- PUAD 5350 - Program Evaluation
- PUAD 5460 - Political Advocacy
- PUAD 5628 - Social Problems and Policies
- PUAD 6600 - Special Topics: Public Administration

**Total: 12 Hours**

## Environmental Policy and Management Concentration

The concentration in Environmental Policy and Management provides an understanding of how our natural environment is governed and affected by relationships between various entities, including legislatures, administrative agencies, courts, government and more.

### Required Coursework

The EPM concentration requires a total of 12 credit hours.

Students must complete at least **two** of the courses below:

- PUAD 5631 - Seminar in Environmental Politics and Policy
- PUAD 5632 - Seminar in Environmental Management
- PUAD 5740 - Sustainable Energy Policy

Students must complete **two** pre-approved elective courses. For a list of pre-approved electives, please consult your Academic Advisor.

**Total: 12 Hours**

## Emergency Management and Homeland Security Concentration

The concentration in Emergency Management and Homeland Security (EMHS) provides advanced education in the management of emergencies, hazards, disasters and homeland security. The EMHS program is designed to meet the needs of students who wish to work, or are currently working, in the field of emergency management and homeland security.

The EMHS program is also offered as a stand-alone Emergency Management and Homeland Security Graduate Certificate program.

### Required Coursework

The EMHS concentration requires a total of 12 credit hours.

Students must complete the following course:

- CRJU 5650 - Public Service in Emergency Management and Homeland Security

Students must complete at least **one** of the courses below:

- CRJU 5655 - Principles of Emergency Management
- CRJU 5720 - Public Policies for Hazards and Disasters
- URPL 6645 - Disaster/ClimateChangePlanning

Students must complete **two** pre-approved elective courses. For a list of pre-approved electives, please consult your Academic Advisor.

**Total: 12 Hours**

## **Gender-Based Violence Concentration**

The concentration in Gender-Based Violence (GBV) focuses on the management and policies surrounding gender-based violence, as well as grass-roots social justice work and best practices in this emerging field. Each fall, 10 to 20 students are accepted into the GBV cohort, allowing the participants to build a strong community of advocates and learners.

This program combines online courses with four intensive campus seminars spaced throughout the two-year program. Nonresident students pursuing the MPA with a concentration in Gender-Based Violence may also qualify for reduced tuition through the Western Regional Graduate Program which covers 14 western states.

The Gender-Based Violence program is also offered as a stand-alone Gender-Based Violence Graduate Certificate program.

### **Required Coursework**

The concentration in GBV concentration requires a total of 12 credit hours. All students will complete the four required courses below. Students will complete all four of required courses below.

- CRJU 5910 - Nature and Scope of Interpersonal Violence
- CRJU 5920 - The Psychology of Interpersonal Violence
- CRJU 5930 - Interpersonal Violence Law and Public Policy
- CRJU 5940 - Interpersonal Violence Leadership, Advocacy, and Social Change

**Total: 12 Hours**

## **Local Government Concentration**

The Graduate Local Government Concentration prepares students to become well-versed in the forces that shape the agendas of the public sector, including those of municipalities, counties, regional authorities and councils of government. Additionally, students gain an understanding of government management and policy making.

### **Required Coursework**

The Local Government concentration requires a total of 12 credit hours.

Students must complete the course below:

- PUAD 5503 - Public Budgeting and Finance

Students must complete **one** core course from the list below:

- PUAD 5625 - Local Government Management
- PUAD 5626 - Local Government Politics and Policy
- PUAD 5628 - Social Problems and Policies

Students must complete **two** pre-approved elective courses. For a list of pre-approved electives, please consult your Academic Advisor.

**Total: 12 Hours**

## **Nonprofit Management Concentration**

The concentration in Nonprofit Management prepares students to become innovative and critical thinkers in the areas of nonprofit organizational management and public policy, with a unique approach that bridges theoretical knowledge with real-world experience. As students prepare for their careers or advancement in their current positions, they gain insight into the interdependence between the nonprofit, public, and for-profit sectors. Graduates are able to span the boundaries of these three sectors to assess community needs, navigate the realm of public policy, and strategically and effectively manage organizations that ultimately benefit society.

SPA's affiliation with the Nonprofit Leadership Alliance gives students the opportunity to earn the Certified Nonprofit Professional (CNP) credential through completion of the Nonprofit Management concentration [or certificate] coursework, additional required extracurricular activities, and an examination. Contact [cnp@ucdenver.edu](mailto:cnp@ucdenver.edu) for more information about this credential.

The Nonprofit Management program is also offered as a stand-alone Nonprofit Management Graduate Certificate program.

### **Required Coursework**

The Nonprofit Management concentration requires a total of 12 credit hours.

Students must complete the course below:

- PUAD 5110 - Seminar in Nonprofit Management

Students must complete **three** pre-approved electives. For a list of pre-approved electives, please consult your Academic Advisor.

**Total: 12 Hours**

## Public Policy Analysis Concentration

The concentration in Public Policy Analysis provides training in the tools and skills needed to assess the impact of public policies and programs, including policy analysis, cost-benefit analysis, program evaluation, multivariate regression, and other analytical techniques.

### Required Coursework

The Public Policy Analysis concentration requires a total of 12 credit hours.

Students must complete the following course:

- PUAD 5320 - Public Policy Analysis

Students must complete **three** additional elective courses from the list below or select unlisted courses that have been approved in advance by the program director.

- PUAD 5200 - Education Policy
- PUAD 5310 - Policy Formulation & Implementation
- PUAD 5330 - Intermediate Statistical Analysis
- PUAD 5350 - Program Evaluation
- PUAD 5631 - Seminar in Environmental Politics and Policy
- PUAD 5720 - Public Policies for Hazards and Disasters

**Total: 12 Hours**

## Public History, MA in History

►Graduate School Policies and Procedures apply to this program.

The MA program in history offers graduate-level major and minor fields in public history. Public history is a field of study that applies historical methods to the public sphere. This graduate major requires a concentration, in either museum studies or historic preservation. Public history majors can minor in any subspecialty the department currently offers. Students majoring in U.S., European or Global history can also minor in public history.

**Admission Requirements-See History MA**

### Degree Requirements

1. Students must complete a minimum of 36 credit hours from approved courses.
2. Students must complete all courses at the graduate (5000 or above) level.



3. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail.
4. Students must complete all credits with CU Denver faculty.

## Required Introductory Course

- HIST 6013 - Introduction to the Professional Study of History

**Total: 3 Hours**

## Major Courses

- HIST 5234 - Introduction to Public History

Students who choose to concentrate in museum studies or historic preservation must take either

- HIST 5231 - History in Museums (for museum studies majors)  
-OR-
- HIST 5232 - Historic Preservation (for historic preservation majors)

### **Research Seminar (3 hours)**

Research seminars focus on students' development of an original, primary research paper.

### **Major Electives (9-12 hours)**

Electives are made up of courses in public history, which focus on methodology and practice and thesis or project credits. These courses include:

- HIST 5133 - Management of Material Culture and Museum Collections
- HIST 5228 - Western Art and Architecture
- HIST 5229 - Colorado Historic Places
- HIST 5240 - National Parks History
- HIST 5242 - Oral History
- HIST 5243 - Public History Administration
- HIST 5244 - Interpretation of History in Museums: Exhibits and Education
- HIST 5245 - Heritage Tourism
- HIST 6992 - Seminar: Colorado Studies

**Total: 18 Hours**

## **Minor Electives**

Electives are made up of courses in the minor field, including readings courses, which address specific field historiographies, or research seminars.

**Total: 12 Hours**

## **Open Elective**

Students may use the open elective to explore a course outside their major or minor or to do extra course work in one of their fields.

**Total: 3 Hours**

**Total: 36 Hours**

## **Independent Studies and/or Internships**

Candidates may register for up to 6 hours of internships or independent study, only one of which may be at the 6000-level. Students will not be allowed to satisfy the research seminar requirement via independent study. *Any independent study or internship at the 6000-level needs the permission of the graduate advisor.* Students interested in pursuing an independent study or internship must find a faculty member willing to oversee their work, and they should expect the workload to equal or exceed that required for other courses at the same level.

- HIST 5840 - Independent Study: History
- HIST 6840 - Independent Study: HIST
- HIST 6939 - Internship

## **Comprehensive Examinations**

All history MA candidates must pass a comprehensive examination in the major and minor fields after the completion of course work and before embarking on a thesis, curriculum project or public history project. The comprehensive exam evaluates students' knowledge of their course work and their reading lists for their major, minor and concentration. In answering their exam questions, students are expected to construct arguments and to show mastery of the historiographies, narratives and historical content in their fields. The comprehensive exam is administered and evaluated by a committee of the major advisor, the minor advisor and an outside reader from the history faculty.

## **Master's Degree Extended Research Options**

The MA program in history offers a set of courses in which students can develop extended research interests. Students must select an advisor and develop a proposal for a specific research agenda in the semester before beginning work on a project.

### **REQUIRED PUBLIC HISTORY THESIS (HIST 6950) OR PROJECT (HIST 6952)**

Students majoring in public history must complete either a thesis (6 semester hours) or a project (3 semester hours).

### **OPTIONAL ADVANCED HISTORY CURRICULUM DEVELOPMENT (HIST 6951)**

Students who undertake their master's program when they are already teachers can choose to construct curriculum projects relevant to their teaching practice. See the separate section below on "Opportunities for Teachers and Teachers-in-Training."

- HIST 6950 - Master's Thesis
- HIST 6951 - Masters Project: Advanced History Curriculum Development
- HIST 6952 - Master's Project: Public History

## **Thesis Requirements**

Students writing theses are expected to develop an original research agenda resulting in an extended paper. Students work with their major field advisor, who will help guide them through the process of research and writing. Students enroll for six credit hours in HIST 6950 to complete their theses. Before registering for HIST 6950, students must have a thesis proposal and initial bibliography approved by their advisor.

A thesis is evaluated by a committee of three, including the major advisor and two other faculty members chosen by the student in consultation with the major advisor. Upon completion of the thesis, the student meets with the committee members, who ask questions about the research and conclusions which the student must defend. In many instances, the committee will require further revisions, sometimes major in scope, before the thesis is accepted and cleared for submission to the Graduate School in fulfillment of degree requirements.

## **Project Requirements**

In lieu of a thesis, public history majors may choose to enroll in one semester of HIST 6952 to complete a public history project. Projects, which are usually conducted in collaboration with a public history organization, can entail creating an exhibit, developing a museum master plan, education program or collection management plan/project, or organizing an archival collection, conducting a preservation survey or similar projects as worked out with their advisor. Students are required to prepare a paper describing the process and results of their project.

- HIST 6952 - Master's Project: Public History

# Opportunities for Teachers and Teachers-in-Training

## Curriculum Projects

Licensed teachers and teachers-in-training enrolled in the history graduate program may choose to complete a curriculum development project. Students arrange curriculum development projects with a sponsoring faculty member. Generally, students are expected to develop and submit a complete course curriculum plan for this 3-semester-hour project. Projects need to show evidence of familiarity with the relevant historiographies and primary sources. Students may apply the credits from HIST 6951 to either the major field or the minor field, depending on the project subjects. Curriculum plans must meet minimum criteria established by the history department in the document *Advanced History Curriculum Development Projects*.

- HIST 6951 - Masters Project: Advanced History Curriculum Development (3 semester hours in their major field or minor field)

## Secondary Teacher Licensure

Students interested in secondary teacher licensure should consult with the School of Education and Human Development. See the Urban Teacher Education Program for information.

## History MA

# Recording Arts, Master of Science (MSRA)

► Graduate School Policies and Procedures apply to this program.

Please click [here](#) to see general Music & Entertainment Industry Studies information.

## Program Overview

Recording arts is a field that deals with all aspects of recorded music and sound, including mixing, mastering, production, MIDI sequencing, live sound reinforcement, and post-production for film and video. The program refines students' skills in sound recording, aesthetics, multi-track recording, analog and digital signal processing, automated mixing, synchronization, stereo and surround imaging, mastering and post-production.

The Master of Science in Recording Arts (MSRA) has the only pedagogy track in the nation. Pedagogy is synonymous with teaching, and the MSRA includes a survey of available resources for audio education. The curriculum offers an interdisciplinary approach, which can

include physics, acoustics, engineering, music recording, psychoacoustics, multimedia, theatre and film/video. The program emphasizes design and development of new methods and materials.

This graduate degree is designed to:

- prepare students for audio careers in mass communications, education, music, multimedia and the entertainment industries.
- enhance advancement of professionals in their careers.
- prepare the music educators of the future.

In their final semester, students will create and defend a thesis or a portfolio.

- *Thesis* -- Written research
- *Portfolio* -- Research in conjunction with a recorded work. This could be a music recording, audio for video, or other media.

Graduate courses comprising the core of the program advance students' artistic, pedagogical, technical and problem-solving abilities. Elective courses allow each student to develop additional skills and knowledge in related areas, including surround sound, acoustics, studio design, digital signal processing and others.

The Department of Music & Entertainment Industry Studies encourages students from allied disciplines (music, physics, engineering, etc.) to apply. Students are not required to have their bachelor's in recording arts; the bachelor's degree can be from any discipline. Applicants can qualify for the MSRA program by having equivalent level preparation (e.g., work experience). Candidates without sufficient experience/training in recording arts may be required to take preparatory courses at the undergraduate level.

**Note: The application process and requirements for the MSRA program differ from those listed for the media forensics emphasis.**

## MSRA Application Components

Admission to the MSRA program is competitive. Applications are accepted for fall-only admission to the cohort. Admission decisions are made by committee and are based on the entirety of the applicant's submitted materials. Incomplete applications are not considered, and application requirements may vary between domestic and international students.

- Graduate Application for Admission
- In-State Tuition Classification Application (if applicable)
- Application Fee
- Entrance Examinations: (TOEFL/IELTS or other evidence of English proficiency, if applicable)
- Official Transcripts
- Three (3) Letters of Recommendation

- Application Essay
- Resume
- Portfolio

**Applications that do not include all of the requirements or that include partial components are considered incomplete and will not be reviewed.**

International applicants are encouraged to visit the Office of International Admissions website for detailed information.

Refer to the MSRA website for deadlines, detailed information and updates regarding the application process and requirements.

## **Required Courses**

- MSRA 5000 - Introduction to Graduate Studies
- MSRA 5001 - MSRA Research Seminar
- MSRA 5580 - Graduate Audio Seminar I
- MSRA 5590 - Graduate Audio Production
- MSRA 6510 - Graduate Audio Studies Pedagogy
  
- MSRA 6950 - Thesis in Professional Audio  
or
- MSRA 6951 - Professional Audio Portfolio Thesis

**Total: 19 Semester Hours**

## **Electives**

Choose **15 semester hours** from the list below. Students may take courses not listed here upon approval of the faculty or academic advisor.

- MSRA 5500 - Topics in Professional Audio
- MSRA 5505 - Introduction to Audio Post Production
- MSRA 5530 - Live Sound Reinforcement
- MSRA 5560 - Mastering & Advanced Digital Audio
- MSRA 5575 - Graduate Surround Sound
- MSRA 5605 - Audio Post Production II
- MSRA 5820 - Digital Music Techniques
- MSRA 5840 - Independent Study for MSRA

**Program Total: 34 Semester Hours**

*Students should plan to graduate in a minimum of four semesters. Students can apply for graduation in any semester (fall, spring or summer), provided they have completed the required course work. All course work must be completed with a satisfactory grade of "B" (3.0) or higher. Students should not register for thesis/portfolio unless approved by the faculty advisor.*

**Please refer to the MSRA website for additional information.**

## **Research and Evaluation Methods MA**

Students acquire skills necessary for a variety of roles that involve data-driven decisions. Students are prepared to facilitate decision-making based on evidence. Some students pursue the degree to enhance their skills as classroom teachers. Others work in environments where information and data from different sources are used to make informed decisions.

### **Required Courses (18 credit hours)**

- RSEM 5100 - Basic Statistics
- RSEM 5120 - Introduction to Research Methods or RSEM 7000 - Doctoral Seminar in Research Methods
- RSEM 5110 - Introduction to Measurement
- RSEM 7110 - Intermediate Statistics
- RSEM 7080 - Methods of Qualitative Inquiry
- RSEM 7210 - Program Evaluation

### **Choose 3 of the following: (9 credit hours)**

- RSEM 6200 - Single Case Research Design for Education
- RSEM 7050 - Methods of Survey Research
- RSEM 7100 - Advanced Methods of Qualitative Inquiry
- RSEM 7120 - Advanced Methods in Quantitative Inquiry and Measurement
- RSEM 7150 - Mixed Methods Research
- 5000+ Level RSEM course with faculty advisor approval

### **Choose 1 of the following: (3 credit hours)**

- RSEM 6950 - Master's Thesis
- RSEM 5840 - Independent Study: RSEM
- RSEM 5910 - Practicum in Research and Evaluation Methodology

### **Total Credit Hours 30**

### **Program Requirements and Courses**

To complete the REM program and earn a master's degree, students must complete the appropriate course work as outlined in the tables above. All courses require a grade of B- or

better to count to the MA and a 3.0 minimum GPA is required for graduation. Students have 7 years in which to complete the degree.

### Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

# Research and Evaluation Methods MA with a concentration in Assessment

This program concentration provides opportunities for you to develop an in-depth understanding about educational psychology as it relates to learning-related assessment. You will address issues in both classroom and large-scale assessment and focus on other forms of assessment, such as portfolios and performance assessments. You also may specialize in assessment in a content area like literacy or mathematics.

There are three possible specializations in this track: P-12 Teacher Track, Educational Leadership Track, and Research and Evaluation Track. All students will take the same courses the first year. The second year, courses vary depending on the chosen track.

## Year 1: Required REM Assessment Foundation Courses (18 credit hours)

<b>Fall Semester</b>	
RSEM 5600 - Issues in Assessment Development	RSEM 5100 - Basic Statistics
<b>Spring Semester</b>	
RSEM 5610 - Formative and Summative Assessment in the Classroom	RSEM 5080 - Research In Schools
<b>Summer Semester</b>	
RSEM 5620 - Analyzing, Using, and Reporting Assessment Results	RSEM 7050 - Methods of Survey Research

## Year 2: P-12 Teacher Track choose 3 + Practicum or Thesis (12 credit hours)

Students wanting to continue teaching in P-12 classrooms, but have teacher-leader roles

- MTED 5301 - Assessment and Equity in Mathematics Instruction



- LCRT 5020 - Reading Development, Instruction and Assessment
- LCRT 5000 - Elementary Literacy Instruction and Assessment Part 1
- LCRT 5001 - Elementary Literacy Instruction and Assessment Part 2
- LCRT 5100 - Secondary Literacy Instruction and Assessment
- 5000+ Level RSEM course with faculty advisor approval

**Choose 1 of the following:** (3 credit hours)

- RSEM 6950 - Master's Thesis
- RSEM 5840 - Independent Study: RSEM
- RSEM 5910 - Practicum in Research and Evaluation Methodology

Year 2: **Educational Leadership Track** choose 3 + Practicum or Thesis (12 credit hours)

Students interested in administration or other leadership roles

- HDFR 5003 - Leadership and Organizations
- LDFS 7712 - Learning and Human Development
- EDUC 7100 - Leadership in Education
- EDUC 7230 - Organizational Performance In Educational Contexts
- 5000+ Level RSEM course with faculty advisor approval

**Choose 1 of the following:** (3 credit hours)

- RSEM 6950 - Master's Thesis
- RSEM 5840 - Independent Study: RSEM
- RSEM 5910 - Practicum in Research and Evaluation Methodology

Year 2: **Research & Evaluation Track** choose 3 + Practicum or Thesis (12 credit hours)

- RSEM 7110 - Intermediate Statistics
- RSEM 7080 - Methods of Qualitative Inquiry
- RSEM 7210 - Program Evaluation
- RSEM 5110 - Introduction to Measurement
- 5000+ Level RSEM course with faculty advisor approval

**Choose 1 of the following:** (3 credit hours)

- RSEM 6950 - Master's Thesis
- RSEM 5840 - Independent Study: RSEM
- RSEM 5910 - Practicum in Research and Evaluation Methodology

**Total Credits for MA: 30**

**Program Requirements and Courses**

To complete the REM program and earn a master's degree, students must complete the appropriate course work as outlined in the tables above. All courses require a grade of B- or better to count to the MA and a 3.0 minimum GPA is required for graduation. Students have 7 years in which to complete the degree.

### **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four- six courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

## **Social Science MSS**

► Graduate School Rules apply to this program

### **Requirements for Admission**

General rules for admission into the Graduate School, as well as the following apply:

- evidence of a bachelor's degree
- an official copy of transcripts from all community colleges, colleges, and universities attended
- overall GPA of at least 3.2 out of 4.0
- a writing sample
- three letters of recommendation (at least two from academic sources)
- appropriate undergraduate training or professional background, or experience that provide evidence of ability to pursue the MSS degree
- a typed statement specifying the goal of advanced study in the social sciences expressed in clear, correct and effective English. Applicants should provide a statement of their background (education and experience) and its relevance to their proposed interdisciplinary graduate work, and why this graduate program is relevant to their interests.
- standardized test scores are not required, but will be considered if submitted

After meeting all other requirements for admission, applicants may be required to have an interview to discuss their interest in the program and their plans for study. For out-of-state applicants, an appropriate substitute for the interview may be determined by the directors.

### **Provisional Admission:**

Applicants may be admitted as provisional-status graduate students if their GPA is low and their complete record indicates a high probability of success.

### **Non-degree Students:**

Potential applicants may take CU Denver graduate-level courses as non-degree students (unclassified student with a bachelor's degree) if they:

1. wish to strengthen their record in order to demonstrate their potential to successfully complete courses in the program
- or-
2. wish to start coursework in the program prior to completing their application, with the understanding that taking courses does not guarantee admission.

Up to 12 semester hours of CU Denver graduate-level work taken as a non-degree student or taken from another university may be accepted by the program once a student has been admitted to the program. For further information on non-degree graduate student status, see the Information for Graduate Students section of this catalog. In the case of CU Denver graduate students transferring to the MSS program, previous coursework may be accepted as appropriate to the MSS plan of study.

### **International Students:**

International students must also meet CU Denver requirements for international admission. See the Information for International Students section of this catalog or call 303-315-2230 for further information.

## **Degree Requirements**

The Master of Social Science (MSS) is a 36 credit hour program, of which 30 hours must meet all specifications of the Graduate School . Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. A grade below *B- in any given course* will not be counted toward the degree. All graded attempts in required and elective courses are calculated in the major GPA. Courses credited toward the MSS degree must typically be taken at CU Denver (a maximum of 12 graduate semester hours may be transferred from other institutions after matriculating into the MSS program, subject to the MSS director's approval). Students wishing to pursue study abroad options must seek advisor approval in advance.

Students may pursue a general MSS degree or concentrate their studies and coursework on an approved track.

Each student's program is supervised by MHMSS faculty. All independent study, project, and thesis contracts must be approved in advance by the program director. A total of two independent study courses and one internship may count toward the degree. Only one graduate-level online course (up to 3 hours) may be taken toward the degree, with prior approval. A maximum of two 4000-level undergraduate courses may apply, with faculty approval. Remaining coursework must be 5000-level or higher and must be completed with CU

Denver faculty or approved study away programs. All students must complete and pass a final project or thesis and an oral comprehensive defense of that work, in order to graduate.

## Three Required Core Seminar Courses

Take **all** of the following courses:

- SSCI 5020 - Foundations and Theories of Interdisciplinary Social Science  
Must be taken during the first year, offered in the fall only.
- SSCI 5013 - Methods and Practices of Graduate Interdisciplinary Humanities  
Must be taken during the first year, offered in the spring only.
- SSCI 5023 - Research Perspectives in Social Science  
Students should take this course after they have completed 21-24 credit hours and are ready to write a proposal for their thesis or project. This course is always offered in the spring and occasionally in the fall, as needed.

**Total: 9 Credit Hours**

## Electives

Students must complete a total of 21-24 credit hours. Students completing a project rather than a thesis take 24 hours of electives, while thesis students complete 21 hours of electives. Students may choose to create their own curriculum from at least two disciplines addressing their specific research interest. Alternatively, students may choose to follow an approved specialized track. Prior to taking electives, students must meet with a MHMSS program faculty advisor and establish their course of study. If students decide to change their course of study or want to substitute approved coursework, they must meet with a MHMSS program advisor in advance and gain pre-approval.

**Study Abroad:** Students wishing to count credits accrued from a study abroad program while pursuing the MSS must follow the rules of the Graduate School and must have approval of the program director in advance of studying abroad.

**Total: 21-24 Credit Hours**

## Thesis or Project

In order to proceed with a project or thesis, all students must submit a proposal and gain approval from three faculty members and the program directors.

- SSCI 6950 - Master's Thesis
- SSCI 6960 - Master's Project or Report

## **Total: 3 or 6 Credit Hours**

### **Oral Exam**

An oral exam defending the project or thesis before a committee of three faculty members must be passed in order to graduate.

## **Degree Total: 33-36 Credit Hours**

### **MSS Elective Pathways:**

#### **General MSS Track**

Students pursuing the general MSS degree track create a course of study based on their individual interests and goals. In consultation with a faculty advisor, students choose two or three academic disciplines as areas of concentration. Students who opt to complete a thesis will submit a thesis proposal after completing 30 hours of course work. In the case of a project, students will submit a project proposal after 33 hours.

#### **Specialized MSS Tracks**

Students may also focus in one of the tracks in the Master of Social Science program: **Community Health, Ethnic Studies, International Studies, Social Justice, Society and the Environment, or Women and Gender Studies.** Tracks allow students to concentrate their studies in a defined field designed by faculty. Students who opt to complete a thesis will submit a thesis proposal after completing 30 hours of course work. In the case of a project, students will submit a project proposal after 33 hours.

#### **Community Health Track**

The Community Health track focuses coursework on social and communication theory, demographics and ethnic dimensions to public health, basic research methods, and statistics, in order to facilitate development of problem solving and critical thinking skills in the areas of epidemiology, public health and public health education, and health planning.

*In addition to the MSS Core requirements, students must:*

***Complete 9 credit hours of approved methods courses from the following list- some of these courses have prerequisites that must be met:***

- HBSC 7041 - Research Design and Methods in the Health and Behavioral Sciences I
- ANTH 6063 - Qualitative Research Design and Methods

- HBSC 7061 - Quantitative Methods in the Health and Behavioral Sciences
- HBSC 7071 - Social and Behavioral Determinants of Health and Disease

***Complete a minimum of 6 credit hours of approved community health related elective coursework from the list below-substitutes may be approved by the student's advisor:***

- ANTH 5600 - Medical Anthropology
- ANTH 5290 - Anthropology and Public Health
- ANTH 5300 - Migrant Health
- COMM 5500 - Health Communication
- COMM 5550 - Rhetorics of Medicine & Health
- COMM 5620 - Health Risk Communication
- ECON 6210 - Public Finance
- ENVS 6230 - Environmental Epidemiology
- GEOG 5230 - Hazard Mitigation and Vulnerability Assessment
- GEOG 5235 - GIS Applications in the Health Sciences
- GEOG 5710 - Disasters, Climate Change, and Health
- HLTH 6010 - Health Care Systems
- HLTH 6070 - International Health Policy and Management
- PHIL 5242 - Bioethics
- PSCI 5354 - Seminar: Environmental Politics and Policy
- PUAD 5615 - Health Policy
- WGST 5345 - Gender, Science and Medicine: 1600 to the Present

***Complete a project or thesis on an approved community health related topic.***

## **Ethnic Studies Track**

The Ethnic Studies track explores the construction of race and ethnicity by governments and communities through the intersection of popular culture and public policy in both the historical and contemporary contexts.

*In addition to the MSS Core requirements, students must:*

***Complete at least one ethnic studies methods/theory course from the list below:***

- ETST 5000 - Research Methods in Ethnic Studies
- EDFN 5001 - Problematizing Whiteness: Educating for Racial Justice

***Complete a minimum of 12 credit hours of approved ethnic studies related elective coursework from the list below, substitutions may be approved by the student's advisor :***

- ANTH 5350 - Anthropology of Globalization
- COMM 5270 - Intercultural Communication
- EDFN 5050 - Critical Issues in American Education
- ENGL 5220 - African-American Literature
- ENGL 5460 - Contemporary World Literature
- HIST 5308 - Crime, Policing, and Justice in American History
- HIST 5412 - Mexico and the United States: People and Politics on the Border
- HIST 5415 - Social Revolutions in Latin America
- HIST 5455 - African Struggle for Independence
- HIST 5462 - Islam in Modern History
- HUMN 5770 - Imperialism, Post-Colonial Theory & Visual Discourse
- SSCI 5540 - Law, Diversity and Community in United States History
- PSCI 5094 - Seminar: Urban Politics
- PSCI 5145 - Indigenous Politics
- PSCI 5206 - Social Movements, Democracy and Global Politics
- PSCI 5245 - Gender, Globalization and Development
- PSCI 5256 - Seminar: National Question and Self-Determination
- PSCI 5446 - Advanced Indigenous Peoples' Politics
- PSCI 5545 - Immigration Politics
- PSCI 5914 - Community Organizing and Community Development
- SOCY 5050 - Health Disparities
- SOCY 5440 - Poverty and Social Inequality
- SOCY 5460 - Hate Groups and Group Violence
- SOCY 5690 - Crime and Inequality Over the Life Course
- SPAN 5020 - Spanish Sociolinguistics
- SPAN 5060 - Dialects of the Spanish-Speaking World
- SPAN 5076 - Spanish in Colorado
- SPAN 5080 - Spanish in the United States
- SPAN 5521 - Mexican Literature I: pre-Columbian and Colonial
- SPAN 5522 - Mexican Literature II: 19th to 21st Centuries

*Complete a project or thesis on an approved ethnic studies related topic.*

## **International Studies Track**

Through humanistic and social science methodologies and hands-on experiences both in Denver and abroad, students learn to identify patterns and trends in the multifaceted discipline of international studies.

*In addition to the MSS Core requirements, students must:*

***Complete the methodology course listed below or one approved by the MSS program advisor:***

- PSCI 5216 - Seminar: International Relations

***Complete a minimum of 15 credit hours of approved international studies related elective coursework from the list below, substitutions may be approved by the student's advisor :***

- ANTH 5350 - Anthropology of Globalization
- COMM 5270 - Intercultural Communication
- COMM 5720 - Dynamics of Global Communication
- HIST 5032 - Globalization in World History Since 1945
- HIST 5220 - U.S. Foreign Policy Since 1912
- HIST 5412 - Mexico and the United States: People and Politics on the Border
- HUMN 5770 - Imperialism, Post-Colonial Theory & Visual Discourse
- PHIL 5220 - Aesthetics and the Philosophy of Art
- PSCI 5236 - Seminar: American Foreign Policy
- PSCI 5245 - Gender, Globalization and Development
- PSCI 5276 - Conflicts and Rights in International Law
- PSCI 5286 - International Relations: War or Peace?
- PSCI 5326 - Advanced International Political Economy: Globalization
- PSCI 5545 - Immigration Politics
- PSCI 5555 - International Women's Resistance
- SOCY 5460 - Hate Groups and Group Violence
- SOCY 5610 - Sociology of Religion

*Complete a project or thesis on an approved international studies related topic.*

## **Social Justice Track**

The Social Justice track expands students' recognition of the many ways that they are already engaged as citizens and highlights their power to effect change through theoretical and moral education, critical thinking, and community engagement.

*In addition to the MSS Core requirements, students must:*



***Complete a minimum of 12 credit hours of approved social justice related elective coursework from the list below, substitutions may be approved by the student's advisor:***

- BUSN 6540 - Legal and Ethical Environment of Business
- COMM 5040 - Communication, Prisons, and Social Justice
- ENGL 5190 - Advanced Topics in Writing & Digital Studies (depending on topic)
- HIST 5455 - African Struggle for Independence
- HIST 5412 - Mexico and the United States: People and Politics on the Border
- HIST 5415 - Social Revolutions in Latin America
- HIST 5308 - Crime, Policing, and Justice in American History
- HIST 5225 - Urban America: Colonial Times to the Present
- HIST 5032 - Globalization in World History Since 1945
- HUMN 5650 - Reflections on Modernity
- HUMN 5720 - Sexuality, Gender and Their Visual Representation
- PSCI 5025 - Local Governance and Globalization
- PSCI 5206 - Social Movements, Democracy and Global Politics
- PSCI 5225 - Democracy and Democratization
- PSCI 5245 - Gender, Globalization and Development
- PSCI 5274 - Conflict Resolution and Public Consent Building
- PSCI 5276 - Conflicts and Rights in International Law
- PSCI 5286 - International Relations: War or Peace?
- PSCI 5414 - Non-Profits and Social Change
- PSCI 5545 - Immigration Politics
- PSCI 5555 - International Women's Resistance
- PSCI 5837 - Contemporary Issues in Civil Liberties
- SOCY 5440 - Poverty and Social Inequality
- SOCY 5460 - Hate Groups and Group Violence
- SSCI 6010 - Methods and Theories of Feminism and Gender Studies
- WGST 5303 - Sex and Gender in Modern Britain
- WGST 5307 - History of Sexuality
- WGST 5345 - Gender, Science and Medicine: 1600 to the Present

*Complete a project or thesis on an approved social justice related topic.*

It is **HIGHLY RECOMMENDED** that students in this track take at least one quantitative and/or one qualitative research methods course as part of their plan of study. There are quantitative and qualitative methods courses offered in Anthropology, Environmental Science, Political Science, Sociology, and

Research, Evaluation, and Statistical Methodology (RESM), which can be approved by the student's MHMSS faculty.

## **Society and the Environment Track**

Society and the Environment is an interdisciplinary track challenges students to apply knowledge from the social and biological sciences to environmental problems across a broad spectrum of institutional sectors and geographic locations.

*In addition to the MSS Core requirements, students must:*

***Complete all required methods courses from the list below:***

- ANTH 5053 - Quantitative Methods in Anthropology
- ANTH 6063 - Qualitative Research Design and Methods

***Complete one technical course from the list below:***

- ANTH 5450 - Development and Conservation: Contemporary Issues
- ANTH 5460 - Development and Conservation: Theory and Practice
- ENVS 6200 - Risk Assessment
- GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing
- GEOG 5080 - Introduction to GIS
- GEOG 5235 - GIS Applications in the Health Sciences

*Complete a minimum of 12 credit hours of approved society and environment related elective coursework from the list below, **substitutions may be approved by the student's advisor :***

- COMM 5282 - Environmental Communication
- GEOG 5090 - Environmental Modeling with Geographic Information Systems
- GEOG 5230 - Hazard Mitigation and Vulnerability Assessment
- GEOG 5265 - Sustainability in Resources Management
- GEOG 5335 - Contemporary Environmental Issues
- GEOG 5350 - Environment and Society in the American Past
- GEOG 5420 - The Politics of Nature
- GEOG 5440 - Science, Policy and the Environment
- GEOG 5680 - Urban Sustainability: Perspectives and Practice
- GEOG 5710 - Disasters, Climate Change, and Health
- PSCI 5135 - Seminar: Political Economy of Latin America
- PSCI 5145 - Indigenous Politics
- PSCI 5217 - Human Rights in Theory and Practice

- PSCI 5236 - Seminar: American Foreign Policy
- PSCI 5276 - Conflicts and Rights in International Law
- PSCI 5354 - Seminar: Environmental Politics and Policy
- PSCI 5555 - International Women's Resistance
- ENVS 5010 - Landscape Biogeochemistry
- ENVS 5020 - Earth Environments and Human Impacts
- ENVS 5280 - Environmental Hydrology

*Complete a project or thesis on an approved society and environment related topic.*

## **Women's and Gender Studies Track**

Women's and Gender Studies are based in feminist theory, queer theory, post-colonial and ethnic studies, and a variety of social sciences and cultural studies.

*In addition to the MSS Core requirements, students must:*

***Complete at least one WGST theory course from the list below:***

- SSCI/WGST/ HUMN 6010 - Methods and Theories of Feminism and Gender
- PHIL/ WGST 5500 - Feminist Philosophy
- HIST/WGST/ ENGL 5306 - Survey of Feminist Thought

***Complete a minimum of 12 credit hours of approved women's and gender studies related elective coursework from the list below, substitutions may be approved by the student's advisor:***

- ENGL 5000 - Studies of Major Authors (when the author is a female)
- ETST/ PSCI 4827 - Women and the Law
- ENGL/WGST/ HIST 5306 - Survey of Feminist Thought
- SSCI/WGST/ HUMN 5720 - Sexuality, Gender and Their Visual Representation
- HUMN/ SSCI 5770 - Imperialism, Post-Colonial Theory, Visual Discourse
- PSCI 4215 - Women's Rights, Human Rights: Global Perspectives
- PSCI 5245 - Gender, Globalization and Development
- PSCI 5555 - International Women's Resistance
- PSCI 4564 - Gender and Politics
- CRJU 5930 - Interpersonal Violence Law and Public Policy
- CRJU 5910 - Nature and Scope of Interpersonal Violence
- WGST/ PHIL 5500 - Feminist Philosophy
- PHIL 5308 - Contemporary Feminist Thought

- SOCY 5550 - Seminar: Sociology of the Family
- WGST 5510 - Whores and Saints: Medieval Women
- WGST 5511 - French Women Writers
- WGST 5230 - Women in the West
- WGST 5248 - Gender, Globalization and Development
- WGST 5303 - Sex and Gender in Modern Britain
- WGST 5307 - History of Sexuality
- WGST 5345 - Gender, Science and Medicine: 1600 to the Present
- WGST 5420 - Goddess Traditions

*Complete a project or thesis on an approved women's and gender studies related topic.*

## Sociology MA

► Graduate School Policies and Procedures apply to this program

### Program Requirements

The MA program in Sociology provides a coherent, progressive educational experience that prepares students for either immediate entry to a master's level career or continued study in a PhD program. Students choose from two options for their Comprehensive Paper that completes the master's degree: either a 6-credit thesis, or a 3-credit applied experience plus a 3-credit paper. The program also offers 3 concentration areas (Crime, Law & Deviance; Health & Society; Family, Social Services & Community) for students seeking specialization in high-demand career areas.

### Required Courses

#### Tier 1 Knowledge

This includes 5 courses required for all graduate students. SOCY 5000 must be taken in the first fall semester. SOCY 5024 must be taken before SOCY 5183 and SOCY 5193. Students must earn a *B* or better in all core courses.

- SOCY 5000 - Professional Seminar: Sociological Inquiry (3 credits)
- SOCY 5016 - Social Theory (3 credits)
- SOCY 5024 - Seminar: Research Methods I (3 credits)
- SOCY 5183 - Seminar: Quantitative Data Analysis (3 credits)
- SOCY 5193 - Seminar: Qualitative Data Analysis (3 credits)

**Tier 1 total: 15 Credits**

## **Tier 2 Knowledge Applied to Substantive Areas**

- 12 elective credits. Credit requirements are fulfilled only for those courses earning a minimum grade of B-.

**Tier 2 total: 12 Credits**

## **Tier 3 Comprehensive Paper**

- SOCY 5955 - Master's Thesis (6 credits)  
OR
- SOCY 5939 - Internship (3 credits)  
OR
- SOCY 5840 - Independent Study: SOCY  
AND
- SOCY 5964 - Master's Report (3 credits)

**Tier 3 total: 6 Credits**

## **Plans of Study**

Students must choose **one** of the following Comprehensive Paper options:

### **Thesis Option Requirements**

Core course requirements                      15 Credits

Four substantive area courses                12 Credits

Master's Thesis                                    6 Credits

- SOCY 5955 - Master's Thesis

**Thesis Option Total: 33 Credits**

### **Applied Project Requirements**

Core course requirements                      15 Credits

Four substantive area courses                12 Credits

Applied Experience (internship or independent study)    3 Credits

Master's Paper

3 Credits

- SOCY 5939 - Internship
- SOCY 5840 - Independent Study: SOCY
- SOCY 5964 - Master's Report

**Applied Project Total: 33 Credits**

## **Substantive Area Requirements (12 credits for both options)**

Students can take an unlimited number of sociology graduate (5000-level) seminars to fulfill their 12 elective credits requirement, or a combination of the following:

- Independent study: maximum 6 semester hours
- Graduate level courses in other departments: maximum 6 semester hours
- Internship: maximum 3 semester hours

For further information about the Department of Sociology or the MA program, visit the Sociology website.

# **Spanish MA**

►Graduate School Policies and Procedures apply to this program

The faculty of the CU Denver Modern Languages Department offer a Spanish Master's degree program that is an alternative to the exclusively literary studies that traditionally lead to doctoral programs. By integrating language, literature and cultural studies with ancillary work in other disciplines, the degree provides a broader expertise that will lead to or enhance careers in teaching, government, social services, business and international trade. Students will tailor the program to their specific interests and needs by developing a topical focus and including courses from outside the Department of Modern Languages, through which they may develop a secondary emphasis that can be incorporated in a thesis project.

## **Requirements for Admission**

In addition to the general admission requirements of the Graduate School, the Spanish MA program requires:

- an undergraduate GPA of at least 3.0, with a GPA of at least 3.0 in Spanish courses
- a bachelor's degree in Spanish is not required, although all candidates must demonstrate Spanish oral and written proficiency at the advanced level, as defined by the American Council on the Teaching of Foreign Languages
- two copies of all college transcripts

- three letters of recommendation
- a statement of the applicant's purpose in pursuing the degree, in Spanish; any gaps, weaknesses or special circumstances affecting an applicant's academic record should be addressed in the statement of purpose portion of the application
- a TOEFL score higher than 550 for students whose previous academic degree was completed in a non-English-speaking country

In special circumstances, the department may modify its admission standards.

## Program Requirements

1. Students must complete a minimum of 27 SPAN credit hours.
2. Students must complete a minimum of 30 graduate level (5000 or above) credit hours.
3. Students must earn a minimum grade of B (3.0) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All credit hours for the certificate must be earned at the University of Colorado Denver.

Candidates in Spanish must satisfy the general requirements of the Graduate School as outlined in this catalog and will be required to complete 33 hours of course work distributed with respect to one of the following two options:

### Thesis option (course work + thesis):

- **3 hours** SPAN 5000 - Introduction to Graduate Studies in Spanish
- **24 hours** Literature/Culture and Linguistics coursework, including at least 6 semester hours in Literature/Culture and 6 in Linguistics. Students may include up to two courses (3-6 credits) from outside the Modern Languages Department, as approved by their advisor.
- **6 hours** SPAN 5950 - Master's Thesis preparation and writing

### Thesis Option Total: 33 Hours

### Nonthesis option (course work):

- **3 hours** SPAN 5000 - Introduction to Graduate Studies in Spanish
- **30 hours** Literature/Culture and Linguistics coursework, including at least 6 hours in Literature/Culture and 6 in Linguistics. Students may include up to two courses (3-6 credits) from outside the Modern Languages Department, as approved by their advisor.

## **Nonthesis Option Total: 33 Hours**

### *Notes:*

1. No more than one undergraduate course (3 semester hours) may be applied toward the MA degree, and that course must have been taken at the 4000 level or above and in an ancillary field outside the Department of Modern Languages.
2. Students choosing the nonthesis option may elect to take three courses (9 semester hours) outside the department.

## **Financial Aid**

The department offers a limited number of teaching assistantships for graduate students on a semester-by-semester basis. Appointment is competitive and is typically based on a student's academic credentials. Contact the department for details. For information on grants, federal work-study programs, scholarships and loans, contact the Office of Financial Aid (303-556-2886).

For further information concerning the master's degree in Spanish at CU Denver, direct inquiries to the graduate advisor.

# **Statistics MS**

## **Program Requirements**

Students must present 30 hours of course work (which are broken into 4 components as detailed below) and maintain a 3.0 GPA or above for the MS degree. At least 24 of these hours must consist of graduate level (numbered 5000 or higher) courses with the MATH prefix. The remaining 6 hours must be either MATH courses numbered 5000 or above or approved courses outside the department numbered 4000 or above.

Up to 9 semester hours of prior course work may be transferred in (subject to approval); these must be at the 5000 level or above with a B- or better grade. Courses already applied toward another degree (graduate or undergraduate) cannot be used toward the MS degree in Statistics. Additionally, the following MATH courses will NOT count toward a graduate degree: MATH 5010, 5012-5015, 5017, 5198, 5250, and 5830.

All students must complete a written project and pass a final oral exam. The project is developed as a student-centered independent research component within MATH 5960 unless the student has chosen the thesis option. For students choosing the thesis option, 4 to 6 hours (of the 30 required hours) may be devoted to the writing of a thesis through MATH 5950. By graduate school rules, Master's students, whether enrolled full-time or part-time, must complete all degree requirements within 7 years of matriculation.



## Course Requirements for the MS Degree in Statistics

The MS degree in Statistics consists of 4 components: 1) core courses, 2) statistics electives, 3) other electives, and 4) MATH5960 (Master's project) or MATH5950 (Master's thesis).

**Core Courses:** The core courses include:

- MATH 5310 - Probability
- MATH 5320 - Introduction to Mathematical Statistics
- MATH 5387 - Applied Regression Analysis
- MATH 6330 - Workshop in Statistical Consulting

**Statistics Electives:** Nine hours of statistics electives are required. A running list is given below. Additional courses can be substituted given prior approval by the student's advisor and the Director of the Program in Statistics.

- MATH 5394 - Experimental Designs
- MATH 5792 - Probabilistic Modeling
- MATH 6101 - Uncertainty Quantification
- MATH 6380 - Stochastic Processes
- MATH 6384 - Spatial and Functional Data Analysis
- MATH 6388 - Statistical and Machine Learning
- MATH 7384 - Mathematical Probability
- MATH 7386 - Monte Carlo Methods
- MATH 7393 - Bayesian Statistics
- MATH 7826 - Topics in Probability and Statistics

Additional courses may be taken but students must seek prior approval from their advisor and the Director of the Program in Statistics.

**Other Electives:** Six hours of other electives are required. Any MATH prefix course that can be used for an MS or Ph.D. degree in Applied Mathematics can be used as an Other Elective. While these courses could be additional statistics-focused courses, the added flexibility allows students to direct their coursework into other areas of mathematics and/or science. The following courses will not count toward the M.S. in Statistics: MATH 5010, MATH 5012-5015, MATH 5017, MATH 5198, MATH 5250 and MATH 5830.

# STEM Education MA with a concentration in Math and Science Education

Math-science educators are in high demand. CU Denver recognizes this shortage and prepares teachers to effectively guide today's learners. Math-science teachers need expertise in understanding STEM learning and highly effective assessment and teaching practices. CU Denver's MA in STEM Education with a concentration in math-science education prepares you to be a leading educator at the forefront of this field.

**This degree plan does not include a license or an endorsement.**

This degree has both on-campus and online options. Online options are 100% online only. Hybrid courses are available to distance students. Distance students participate via video conference in hybrid courses and local students attend face to face sessions. Therefore, the program may be completed with online courses.

**Core Courses** (12 credit hours) - will be decided by student with Faculty Advisor

- two courses from the Mathematics Education (MTED) on campus or online core (6 credit hours)
- two courses from the Science Education (SCED) core (6 credit hours)

In consultation and with approval from your faculty advisor, select five courses from the **Thematic Course Categories** to customize your learning (15 credit hours).

- Course 1
- Course 2
- Course 3
- Course 4
- Course 5

**Concentration Research Course** (3 credit hours):

- RSEM\_\_\_\_\_

To be decided by student with Faculty Advisor

**Concentration Capstone Course:**

The Capstone is completed in your final core course. The Capstone Course is not an additional 3 credit hours; rather it is a project which takes place within one of your core MTED or SCED courses.

**Total Credit Hours 30**

**Program Requirements and Courses**

To complete the STEM Education program and earn a master's degree, students must complete the appropriate course work as outlined above. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

### **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

# **STEM Education MA with a concentration in Mathematics Education: On Campus**

The need for qualified and effective mathematics teachers has never been greater. University of Colorado Denver recognizes that impactful mathematics teaching requires a deep understanding of both student learning and mathematic content. Graduates of the STEM MA mathematics education concentration are positioned to work successfully in leadership roles in urban and diverse schools and understand the important role mathematics play in their student's lives.

**This degree plan does not include a license or an endorsement.**

This degree option is available for on-campus students. Core Courses are fully online. You may choose elective courses in on-campus, hybrid, or fully online formats.

### **Core Courses** (12 credit hours)

- MTED 5621 - A World of (Different) Numbers: Quantity and Operation
- MTED 5622 - Expanding Conceptions of Algebra
- MTED 5623 - Geometrical Ways Of Reasoning
- MTED 5301 - Assessment and Equity in Mathematics Instruction

### **Thematic Course** (15 credit hours)

The Thematic Course Categories is a collection of courses across all SEHD disciplines designed to allow students to expand student learning.

- Course 1
- Course 2
- Course 3
- Course 4
- Course 5

### **Concentration Research Course** (3 credit hours)

RSEM \_\_\_\_\_

To be decided by student with Faculty Advisor

### **Concentration Capstone Course**

MTED \_\_\_\_\_

The Capstone is completed in your final core course.

### **Total Credit Hours 30**

### **Program Requirements and Courses**

To complete the STEM Education program and earn a master's degree, students must complete the appropriate course work as outlined above. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

### **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

# **STEM Education MA with a concentration in Mathematics Education: Online**

The need for qualified and effective mathematics teachers has never been greater. University of Colorado Denver recognizes that impactful mathematics teaching requires a deep understanding of both student learning and mathematic content. Graduates of the STEM MA mathematics education concentration are positioned to work successfully in leadership roles in urban and diverse schools and understand the important role mathematics play in their student's lives.

**This degree plan does not include a license or an endorsement.**

This degree option is available for online students. Core courses are fully online and asynchronous. Distance students may select hybrid courses when available. Distance students participate via video conference in hybrid courses and local students attend face to face sessions. Therefore, the program may be completed with online courses.

### **Core Courses** (12 credit hours)

- MTED 5621 - A World of (Different) Numbers: Quantity and Operation
- MTED 5622 - Expanding Conceptions of Algebra

- MTED 5623 - Geometrical Ways Of Reasoning
- MTED 5301 - Assessment and Equity in Mathematics Instruction

### **Thematic Courses** (15 credit hours)

The Thematic Course Categories is a collection of courses across all SEHD disciplines designed to allow students to expand student learning.

- Course 1
- Course 2
- Course 3
- Course 4
- Course 5

### **Concentration Research Course** (3 credit hours)

RSEM\_\_\_\_\_

To be decided by student with Faculty Advisor

### **Concentration Capstone Course**

MTED\_\_\_\_\_

The Capstone is completed in your final core course.

### **Total Credit Hours 30**

### **Program Requirements and Courses**

To complete the STEM Education program and earn a master's degree, students must complete the appropriate course work as outlined above. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

### **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

# **STEM Education MA with a concentration in Science Education**

CU Denver's STEM Education MA with a concentration in science education prepares licensed practicing teachers to think critically about the nature of science education from a research oriented perspective. Graduates of this program are positioned to be leaders in their communities, and in diverse schools.

**This degree plan does not include a license or an endorsement.**

This degree has both on-campus and online options. Online options are 100% online only. Hybrid courses are available to distance students. Distance students participate via video conference in hybrid courses and local students attend face-to-face sessions. Therefore, the program may be completed with online courses.

### **Core Courses** (12 credit hours)

- SCED 5340 - Equity & Culture in Science Education: Local/Global
- SCED 5500 - The Nature of Science
- SCED 5350 - Issues and Trends in Science Education
- SCED 6110 - Science and Math Curriculum Studies

### **Thematic Course** (15 credit hours)

The Thematic Course Categories is a collection of courses across all SEHD disciplines designed to allow students to expand student learning.

- Course 1
- Course 2
- Course 3
- Course 4
- Course 5

### **Research Course** (3 credit hours)

RSEM \_\_\_\_\_

To be decided by student with Faculty Advisor

### **Capstone Course**

SCED \_\_\_\_\_

The Capstone is completed in your final core course.

### **Total Credit Hours 30**

### **Program Requirements and Courses**

To complete the STEM Education program and earn a master's degree, students must complete the appropriate course work as outlined above. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

### **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

# **Taxation MS**

**Program Director:** Eric Zinn  
**Telephone:** 303-315-8482  
**E-mail:** Eric.Zinn@ucdenver.edu

The world of tax is constantly changing. Globalization and increased competition, both domestically and internationally, have created a situation where tax law is helping to shape social, political, economic, and business policies and agendas. Because of this constant change, the demand for tax professionals potentially may grow by more than 20% in the next decade, and, with that growth, average starting salaries can be as high as \$50,000 or \$60,000.

To meet market demand for tax professionals, the CU Denver Business School has created an MS in Taxation ("MTAX") degree program to give students the skills and knowledge they need to succeed in this dynamic and intriguing career field. The MTAX degree program is a 30-semester hour program, typically comprised of ten 3-semester hour courses.

## **Tax Prerequisites: (12 semester hours)**

The MS in Taxation requires completion of the following accounting prerequisites.

Required Prerequisite Courses (advisor will evaluate transcript for possible waivers, grades must be a C or better to be considered for possible waiver):

- ACCT 6031 - Intermediate Financial Accounting I  
(Equivalent undergrad course: ACCT 3220 Intermediate Financial Accounting I)
- ACCT 6032 - Intermediate Financial Accounting II  
(Equivalent undergrad course: ACCT 3230 Intermediate Financial Accounting II)
- ACCT 6070 - Intermediate Cost Accounting  
(Equivalent undergrad course: ACCT 3320 Intermediate Cost Accounting)
- ACCT 6140 - Fundamentals of Federal Income Tax  
(Equivalent undergrad course: ACCT 4410 Fundamentals of Federal Income Tax)

## **Tax Core: (24 semester hours)**

Students may not receive graduate credit for undergraduate coursework and may not retake any course successfully completed at the undergraduate level with a grade of "C" or better. An advisor will evaluate prior coursework to determine possible substitutions.

- ACCT 6020 - Auditing Theory
- ACCT 6054 - Accounting Information Systems
- ACCT 6150 - Taxation of Business Entities
- ACCT 6280 - Accounting Ethics
- ACCT 6400 Taxation of C Corporations and Shareholders
- ACCT 6410 Advanced Tax for Individuals

- ACCT 6450 Tax Research
- ACCT 6480 Partnership Taxation

## **Tax Electives: (6 semester hours)**

Choose two from the following courses:

- ACCT 6024 - Advanced Financial Accounting
- ACCT 6080 - Accounting for Government and Nonprofit Organizations
- ACCT 6250 - Seminar: Financial Accounting
- ACCT 6260 - Seminar: Managerial Accounting
- ACCT 6285 - Accounting and Finance for Sustainability
- ACCT 6330 - Fraud Auditing
- ACCT 6340 - Financial Statement Analysis
- ACCT 6370 - International Accounting
- ACCT 6520 - Issues in Oil and Gas Accounting
- ACCT 6620 - Seminar: Auditing and Other Assurance Services
- ACCT 6939 - Internship/Cooperative Education

**Total: 30 hours**

# **Urban and Regional Planning MURP**

**Chair:** Austin Troy

**Office:** CU Denver Building 330F

**Telephone:** 303-315-1000

**Fax:** 303-315-1050

## **Faculty**

### **Professors:**

Nan Ellin, PhD, Columbia University

Austin Troy, PhD, University of California, Berkeley

### **Associate Professor:**

Jeremy Németh, PhD, Rutgers University

Andrew Rumbach, PhD, Cornell University

### **Assistant Professors:**

Carrie Makarewicz, PhD, University of California, Berkeley

Manish Shirgaokar, PhD, University of California, Berkeley



## **Assistant Professors (Clinical Teaching Track):**

Ken Schroepfel, MURP, University of Colorado Denver

Jennifer Steffel Johnson, PhD, University of Colorado Denver

Additional information about faculty in this department is available on the college website.

## **Overview**

The Department of Urban and Regional Planning at the University of Colorado Denver has evolved to become one of the strongest, most unique graduate planning programs in the United States, offering a real-world, experientially-oriented program that uses Colorado as a classroom and engages students with the community. It offers the Master in Urban and Regional Planning degree, the only accredited graduate planning degree in the state of Colorado.

We believe that successful city-building requires expertise, breadth, interdisciplinary understanding, and creativity. Our program looks beyond traditional professional silos and instead centers on issues at the forefront of planning practice. Our three Initiatives - Healthy Communities, Urban Revitalization, and Regional Sustainability - form the basis of our research, instruction, and community outreach.

We encourage all students to follow their passion and develop expertise in the areas that matter most to them. Our unique, self-directed curriculum that allows students to understand the breadth of the planning field while gaining the technical expertise demanded by the profession.

Our list of program faculty includes some of the most respected researchers and educators in the planning field, as well as top local planning practitioners, all of whom bring a wealth of experience to the classroom. All of our faculty make teaching a top priority.

Our presence in a College of Architecture and Planning ensures that our approach to planning education has a strong connection to design, and our location in the heart of downtown Denver offers students endless opportunities for experiential learning and interaction with the community.

## **Program Mission and Values**

Our vision is to be a national leader in educating skilled, engaged planners and creating vibrant, sustainable communities.

Inspired by our setting in the downtown of a thriving urban center in the dynamic Rocky Mountain region, our mission is to:

- **Teach** - Teach our students the knowledge, skills, and values they need to be confident, principled, and visionary planners, using Colorado as our classroom to engage students in real-world, experiential learning.

- Advance - Advance the field of planning through insightful, relevant research that directly informs policy and improves our built, natural, and social environments.
- Serve - Serve as a vital resource for communities and professionals, and help develop sustainable solutions to our region's complex planning challenges.

Several core values inspire all the work we do:

- Advocacy - We believe planners must be visionary in their work, politically engaged, and articulate proponents for positive change.
- Collaboration - We believe planners must understand and value the principles and perspectives of allied disciplines that participate in planning and city building.
- Engagement - we believe students should learn planning by interacting directly with professionals and the public to solve real-world planning challenges.
- Evidence-based approaches - We believe that planning research and practice should be rooted in critical thinking, appropriate methods, and rigorous analysis for developing evidence-based solutions.
- Service - We believe our program should serve as a resource for planning professionals and the public by offering ideas, solutions, research, advocacy, and inspiration.
- Sustainability - We believe planning must be based on the principles of economic viability, environmental resiliency, and social equity.
- Social Justice - We believe planning must strive to create the most just and equitable processes and outcomes for historically marginalized, underrepresented, and disenfranchised individuals and communities

## **Our Faculty**

The faculty of the Department of Urban and Regional Planning consists of a purposeful mix of full-time tenured/tenure-track faculty, full-time clinical-track faculty, and a diverse group of part-time lecturers who keep one foot in the professional practice of planning and one in the classroom. The MURP program and its students benefit from the rich contributions of the scholarly research accomplished by our tenured/tenure-track faculty, and the practice-oriented instruction provided by our lecturers and instructors. To learn more about our MURP faculty members, please visit the college website.

## **Our Students**

Our commitment to our students extends across many areas: providing them with exceptional instruction and research-backed knowledge about planning; inspiring them to achieve great things in their personal and professional lives; exposing them to planning professionals, real-world planning situations, and state-of-the-art learning resources; and helping them choose their best academic and career paths through advising and mentoring.

# Curricular Approach

## Program Hallmarks

Our passion for teaching students the knowledge, skills and values they will need to be confident, principled, and visionary planners is reflected in the five key features we've integrated across our program and curriculum:

- **Engaged and Experiential Learning**  
We give students numerous opportunities throughout our program to gain hands-on experience by participating in real-world projects and interacting with professional planners and community stakeholders. We use Denver's diverse urban setting and Colorado's rural and mountain landscapes as a real-world classroom for students to engage with the built, natural, and social environments.
- **Physical Planning Orientation**  
We emphasize physical planning and design throughout our curriculum and connect them to policy, research, and the social sciences. We work closely with the College's Architecture, Urban Design, Landscape Architecture, and Historic Preservation programs to explore and develop applied solutions to urban social, economic, and environmental issues.
- **International Learning Opportunities**  
We provide students the opportunity to study planning from an international perspective. By offering lecture courses that focus on global planning and development issues, studios that involve on-site coursework and engaged learning in other countries, and collaborations with universities and organizations abroad, we help students expand their personal and educational worldview.
- **Integrated Planning Technologies**  
We integrate into our curriculum key professional technologies in realms such as digital mapping, 3D modeling, data visualization, and spatial analysis. We capitalize on Denver's entrepreneurial spirit and tech-focused economy to provide students with state-of-the-art resources and numerous opportunities to learn a variety of technologies and applications used as critical tools in the planning process.
- **Self-Directed Elective Curriculum**  
We empower students with the opportunity to craft a planning education suited to their career goals and personal interests. Students may choose any combination of elective courses, whether oriented toward one of our three curriculum pillars, a traditional or customized planning specialization, or a generalist survey of the planning field.
- **Professional and Career Development**  
We present students with instruction, guidance, and resources for understanding the

many career paths within planning and allied fields and how to strategically position themselves to successfully achieve their professional and personal goals. We enable students to be prepared for not only their first planning job, but for a lifelong career.

- **Diverse Faculty Experience**

We embody a planning faculty comprised of a mix of clinical professors and lecturers who bring to the classroom years of professional experience and expertise in planning-related fields, and tenure-track professors who bring experience in scholarship and research. All of our faculty make teaching a top priority.

## **Dual Degrees**

As part of encouraging among planners an appreciation for and a knowledge of the perspectives and practices of the other disciplines that participate in planning and city-building, we offer several dual degree opportunities, both with programs within the College of Architecture and Planning and with other units across the University of Colorado system. In every instance, the total credit requirement of the Dual Degree is considerably less than would be needed if each degree were independently pursued. The degrees that may be combined with the Master of Urban and Regional Planning include:

- Master of Architecture (MURP+MARCH)
- Master of Landscape Architecture (MURP+MLA)
- Master of Public Health (MURP+MPH)
- Master of Public Administration (MURP+MPA)
- Master of Business Administration (MURP+MBA)
- Master of Science degree in Historic Preservation (MURP+MSHP)
- Master of Engineering - Transportation Systems (MURP+MENG)
- Juris Doctorate (Law Degree) (MURP+JD-in collaboration with the CU Boulder Law School)

Information about the dual degrees can be found on the College website.

## **Programs**

- Urban and Regional Planning MURP

# **URBAN AND REGIONAL PLANNING MURP**

The Master of Urban and Regional Planning Program at the University of Colorado Denver offers a hands-on learning experience that uses Colorado as a classroom, incorporates experiential education in the curriculum, and engages students with real-world issues and community stakeholders.

The program is built on the belief that successful city-building requires expertise, breadth, interdisciplinary understanding, and creativity. Our program looks beyond traditional professional silos and instead centers on issues at the forefront of planning practice. Our three Initiatives - Healthy Communities, Urban Revitalization, and Regional Sustainability - form the basis of our research, instruction, and community outreach.

Students in the MURP program are encouraged to follow their passion and develop expertise in the areas that matter most to them. Thus, we offer a unique, self-directed curriculum that allows students to understand the breadth of the planning field while gaining the technical expertise demanded by the profession. Our list of program faculty includes some of the most respected researchers and educators in the planning field, as well as top local planning practitioners, all of whom bring a wealth of experience to the classroom. All of our faculty make teaching a top priority.

Our presence in a College of Architecture and Planning ensures that our approach to planning education has a strong connection to design, and our location in the heart of downtown Denver offers students endless opportunities for experiential learning and interaction with the community.

## **Curriculum**

### **Program Requirements**

Completing the MURP degree requires 54 semester hours, comprised of 36 semester hours of required "core" courses and 18 semester hours of elective courses. (Six of the 36 required semester hours represent a self-directed Capstone project or thesis.) Most full-time students complete the program in two years, while other students complete the program at a slower or part-time pace.

New students begin the program of study in the fall semester. Full-time students typically take approximately 12 semester hours per semester; taking more than 15 per semester is generally ill-advised. With the exception of the studio and capstone courses, most core courses are offered only one semester per year so it is important to pay attention to the scheduling to ensure your desired graduation date.

### **Program Requirements**

The total number of semester hours required to earn the Master of Urban and Regional Planning degree is 54. To reach the 54 total semester hours needed, students must earn 36 credits by completing and passing the required core courses. Students must earn an additional 18 credits by completing elective courses of their choice. Students must also meet final course

grade minimums and cumulative GPA requirements. Please note: The 54 total semester hours needed may be reduced for students who meet the requirements for advanced standing or who have transfer credits, please refer to the MURP Student Handbook for guidelines.

## **Potential Specializations**

We encourage students to view their planning education through a fresh perspective aimed at a planning goal or agenda, rather than a "job description." However, we also recognize that some students may want their MURP degree to focus on a traditional specialization, such as Transportation Planning or Economic Development. To ensure all our students have the educational experience they are seeking, we provide exceptional coverage across many traditional specialization topics.

## **Advising**

Roxy New serves as the MURP Academic Advisor and Course Coordinator on the College staff. She is the keeper of MURP student records and the person to ask about academic policies and which forms need to be filled out for different things. Roxy can help you with registering for classes and graduation requirements. If your question or issue has to do with anything administrative relating to the MURP program, the College of Architecture and Planning, or the University of Colorado Denver, start with contacting Roxy at [roxy.new@ucdenver.edu](mailto:roxy.new@ucdenver.edu) or 303-315-0343.

In addition to Roxy, the Planning faculty are also an important advising resource for MURP students. The Planning faculty can help you with information about specific course content, career advice, and any other issues relating to the MURP curriculum, academic achievement, extracurricular activities, or urban and regional planning in general. At the start of the fall semester, you will select an initial faculty advisor from among the seven full-time Planning faculty and will be required to have an introductory meeting with that faculty member during the first two weeks of the fall semester. After that, we have an "open door" policy on advising, which means you may stick with that initial faculty advisor, choose a different faculty member to be your advisor, or have multiple faculty advisors. You may choose your faculty advisors based on their expertise in a particular area of interest (see list below) or based on whatever criteria are important to you. You are welcome to change faculty advisors at any point or seek advice from multiple faculty members. You may work with your faculty advisor as much or as little as you need.

We recommend you use a MURP Program Planning Form available on the college website to keep track of the courses you've taken and that you plan to take while you're a MURP student. Planning forms are also available to help guide dual degree students. Dual degree students should have an advisor in each relevant department or college. Electronic Degree Auditing is available for all MURP students. This online system allows you to check which degree requirements you have personally satisfied and which ones remain. Instructions for accessing the degree audit are available in the Electronic Degree Auditing Info document available on the college website.

The following list offers suggestions for which faculty members to consult with regarding different areas of interest or expertise:

- Carrie Makarewicz: Community development, sustainable economic development strategies, transport equity, regional planning, urban school reform, real estate development
- Manish Shirgaokar: Transportation planning, transportation equity, travel behavior, GIS and spatial analysis,
- Jeremy Németh: Placemaking and urban design, urban politics, land use planning, land use conflict, politics of public space, environmental justice, thesis and research
- Andrew Rumbach: Disasters and climate change, environmental risk, urban resilience, international planning, small town and rural development
- Ken Schroepel: Urban development and revitalization, urban form, planning methods, planning history of Denver, professional engagement and networking, careers in planning
- Jennifer Steffel Johnson: Affordable housing, social justice, diverse communities, mixed-income housing, community development, internships and mentorships
- Austin Troy: Land use policy, environmental planning, urban green infrastructure, GIS, spatial analysis, regional sustainability

## **Independent Study**

Independent Study is a student self-directed learning experience with faculty oversight, guidance, and evaluation. The purpose of Independent Study is to provide a mechanism for students to pursue projects that do not fit within the framework of regular course offerings. Independent study offers students an important opportunity to engage in research or creative activity in an area of inquiry not offered through regular courses, or in greater depth than offered in regular courses. An Independent Study course should not duplicate courses that are traditionally offered at the university; rather, it is intended to be a truly independent exploration of a topic or a project of a special nature. Students must secure a faculty advisor for their Independent Study course. The faculty member's expertise and availability should be appropriate for the topic of study and the student's learning objectives.

Students who undertake Independent Study are expected to be self-motivated and largely self-directed. Faculty members reserve the right to decline to be an Independent Study advisor. Only full-time Department of Urban and Regional Planning faculty members may officially serve as a MURP Independent Study advisor. Adjunct faculty members and faculty in other departments may serve as co-advisors, but the instructor of record (i.e., grader) must be a full-time MURP faculty member. Students are encouraged to consult with other faculty and/or professionals as part of their Independent Study, but the faculty Independent Study advisor is responsible for evaluating the project and providing the majority of advising. MURP students wishing to undertake an Independent Study must have a grade point average of 3.0 or greater in the MURP program. Students can apply a maximum of one three-credit Independent Study

course towards their MURP degree. (However, under special circumstances, and with departmental approval, students may be able to take two Independent Study courses.)

A MURP Independent Study project should have a focus within the field of Urban and Regional Planning, although it may be of an interdisciplinary nature. The Independent Study deliverables should be sufficient to evaluate the student's level of learning and mastery of the chosen topic. Independent Study will be graded with a letter grade and is subject to MURP, CAP, and CU Denver grading and academic policies. The project specifics are to be provided by the student in the Independent Study Proposal and approved by the student's Independent Study faculty advisor.

Students should expect to devote a minimum of nine hours per week during the fall or spring semester, and 18 hours per week during the summer semester, for a three-credit Independent Study course. Students are expected to meet periodically with their Independent Study faculty advisor throughout the semester, and the student and advisor should agree on project milestones and a meeting schedule.

A document with complete Independent study guidelines, including enrollment process, is available upon request from the Chair or Associate Chair.

### **Self-Directed Curriculum**

Students have the ability to craft a MURP degree suited to their career goals and personal interests. Students may choose any combination of elective courses, whether oriented towards one of the three Program Initiatives (Healthy Communities, Urban Revitalization or Regional Sustainability), a traditional specialization such as "Transportation Planning" or "Community Development," or a generalist survey of the planning field. A total of 18 semester hours (six three-credit courses) of electives are needed for the MURP degree.

The MURP Student Handbook on the MURP website offers suggestions for matching elective courses to potential specializations to help students decide which electives to take. Ultimately, students may choose whichever combination of elective courses they desire.

Of course, the most helpful resource for assisting students in choosing their self-directed path through the MURP program is the planning faculty. Students should not hesitate to reach out to any faculty member for advice about which electives to take or any topic relating to the MURP program or careers in planning.

### **Core Courses**

The MURP Program curriculum includes 10 required "core" courses totaling 36 semester hours. These courses provide students with a comprehensive survey of the planning field and the foundational knowledge, skills, and values important to the profession. The core courses have been carefully designed to fully comply with the Planning Accreditation Board's required educational outcomes. The list below shows the core courses and the program year in which the course is suggested to be taken.



### YEAR 1 - FALL

- URPL 5000 - Planning History and Theory
- URPL 5010 - Planning Methods
- URPL 5020 - Planning Law and Institutions (note, this course can also be taken in the second year; students should discuss what is the best time to take it with their advisor)
- URPL 5030 - The Planning Profession  
**12 semester hours**

### YEAR 1-SPRING

- URPL 5040 - Urban Sustainability
- URPL 5050 - Urban Development
- URPL 5060 - Planning Workshop  
**12 semester hours**

### YEAR 2

- URPL 6000 - Planning Project Studio (may be taken in Summer or Fall)  
Student's choice of ONE of the following 6-credit courses:
- URPL 6900 - Planning Capstone  
- OR -
- URPL 6920 - Planning Thesis A  
and
- URPL 6925 - Planning Thesis B  
**12 semester hours**

## **Elective Courses**

Beyond the core curriculum, MURP students follow a self-directed educational path. Students may choose any combination from our broad offering of elective courses, whether aligned with one of our three Initiatives, a traditional or unique specialization, or a generalist survey of the planning field. We offer MURP students a broad selection of elective courses within the program. In addition, numerous other elective courses applicable for MURP credit are available through our allied programs within the college (Architecture, Urban Design, Historic Preservation, and Landscape Architecture) and through cross-listed courses offered by other CU Denver programs, such as Public Affairs, Geography, and Business.

## **Internships**

Internships are an important way the MURP program helps students achieve hands-on, experiential learning. The difference between an internship and a part-time job is that an internship is specifically intended to be a learning experience. While getting academic credit for

an internship is not required, it is highly recommended. Students earn three elective credits for enrolling in URPL 6805 but, more importantly, the coursework will enable students to maximize the personal and professional development their internship affords. More detailed information on internships is available in the MURP Student Handbook.

## **Planning Workshop/Project Studio**

Planning Workshop (URPL 5060) and Planning Project Studio (URPL 6000) are the two studio core courses. These courses are a key part of the hands-on, real-world focus of the MURP program.

Planning Workshop is the introductory studio for MURP students. It provides students an opportunity to address actual planning problems, issues, and processes; apply previously acquired knowledge and skills; and develop new knowledge and practical skills in an applied context.

Students will develop basic competence in accessing existing information, generating new information, and performing planning analysis and synthesis. Students will also learn to enhance their graphic, written, and oral communication capabilities. Through the Planning Workshop experience, students will develop an understanding of the relationship between planning theory and practice, as well as gain the ability to formulate compelling planning arguments in applied settings.

Students will also receive introductory instruction in Geographic Information Systems (ESRI ArcGIS) and Trimble SketchUp, which complement the introductory instruction in Adobe Creative Cloud (Photoshop, Illustrator, InDesign) students receive in The Planning Profession course. The integration and use of all of these common planning technology applications is a critical component of the Planning Workshop experience.

Planning Project Studio is the MURP program's advanced studio course. This studio requires students to work together as a "planning consultant team" to complete a single planning project or study from beginning to end for a real-world client. It is expected that students enrolled in Planning Project Studio will have already gained the fundamental planning knowledge, skills, and values from their experience in Planning Workshop and other MURP courses. Consequently, the emphasis in Planning Project Studio is on putting everything together into a complete real-world planning project.

The studio will emulate the typical planning consultant/client experience, including: refining the project scope and schedule with the client; establishing guiding principles and expected outcomes; conducting case studies and existing plans background research; gathering and analyzing existing conditions data; formulating alternative plan concepts; assessing alternative concepts through specific criteria; identifying and refining the preferred alternative; and preparing and presenting the final plan deliverables to the client. Emphasis is also placed on professionalism, project management, team-building and collaboration, client management, public involvement, and other aspects of the real-world planning consultant realm.

Each Planning Project Studio course section will focus on a project generally associated with one of the MURP program's three initiatives (Healthy Communities, Urban Revitalization, and Regional Sustainability). Typically three to five sections of Planning Project Studio are offered each academic year, thereby ensuring that students will have a chance to enroll in a Planning Project Studio section that is aligned with an initiative of interest to them. However, as each studio section is limited in size, there is no guarantee students will be able to enroll in their preferred section. A balloting process will be used when necessary.

In addition to the Fall semester Studios, we generally offer Summer studios that involve travel, including overseas studios and a domestic studio in Colorado.

## **Planning Capstone/Planning Thesis**

The culminating component of the MURP curriculum is the Planning Capstone/Planning Thesis requirement, which challenges students to utilize to the fullest extent the planning knowledge, skills, and values gained during their MURP program experience. Students must choose which option to select-Planning Capstone or Planning Thesis-based on their career goals, personal interests and aptitudes, and the advice of their faculty advisor.

Planning Capstone is a six-credit, project-oriented, one-semester course that results in a substantial deliverable upon completion. The Capstone option is best suited for students who wish to pursue a career as a professional planner after graduation. Within the Planning Capstone option are two alternatives: Independent Project and Small-Group Project.

If a student chooses the Planning Capstone > Independent Project path, he or she will work individually to complete a significant planning project or study for a real-world client. If a student chooses the Planning Capstone > Small-Group Project path, he or she must team up with one or two other students-forming a project team of no more than three people to complete a significant planning project or study for a real-world client. However, each student must be individually responsible for a clearly defined component of the project as each student will be graded independently for his or her work.

During the semester before enrolling in Planning Capstone, students will be required to: (a.) determine if they will be working independently or as part of a small group, (b.) identify their Capstone client and project topic, and (c.) begin preparing a detailed project prospectus (work plan, schedule, methodology, and deliverables). Also during the semester before Capstone, students must attend a mandatory Capstone Orientation to receive instruction and guidance on project planning and management. Students must have a completed and approved project prospectus by the second week of their Capstone semester. Students may identify their own Planning Capstone client and project topic or they may select from a list of Capstone clients/projects that have been pre-arranged and approved by the MURP faculty.

During the Planning Capstone semester, students complete their project work while maintaining regular contact with their Capstone faculty advisor and client to ensure sufficient progress and work quality, as well as periodically meeting with other Capstone students to discuss common issues and challenges, share experiences, and receive continued instruction

and guidance from the Capstone faculty on project management and methodologies. The Planning Capstone semester concludes with the submission of all deliverables and a formal presentation to the client and Capstone faculty.

For more information about the Planning Capstone option, please visit the Capstone webpage on the college website.

Planning Thesis comprises a pair of three-credit courses (A and B) taken over two semesters that together constitute a six-credit effort. The thesis option is most appropriate for outstanding MURP students who are considering pursuing a Ph.D. or a research-oriented career after graduation. More information about the thesis option can be found in the MURP Student Handbook.

## Urban Design MUD

► Graduate School Rules apply to this program

**Program Director:** Ken Schroepfel

**Program Advisor:** Roxy New

**Telephone:** 303-315-1000

**Email:** ken.schroepfel@ucdenver.edu

### Program Description

The Master of Urban Design (MUD) is an intensive, calendar year, post-professional degree program for students already holding a first professional degree in architecture, landscape architecture or urban and regional planning (e.g., BArch, BLA, MArch, MLA, MCRP, MURP or equivalents). Students enrolled in other masters programs in the College of Architecture and Planning can apply and enter the MUD program concurrently to complement and complete their primary studies with the additional degree. Concurrent degree options include MLA, MURP and MArch, students completing these tracks may receive up to 12 credits of advanced standing. In order to graduate with a concurrent degree plan, students must complete the professional degree (MLA, MURP, or MArch) prior to or at the same time as MUD. This interdisciplinary urban design program takes advantage of Denver and the region as an urban laboratory but engages regional, national and global issues, educating future designers about the unique place the city holds in addressing the critical problems of our time.

The program began in 1969 and is one of the oldest in the United States. It counts several hundred alumni practicing around the world. Its student body is extremely diverse, with recent students from Bangladesh, China, Colombia, India, Iran, Japan, Libya and Saudi Arabia. These students join our domestic students to examine contemporary urbanism and design practices through an interdisciplinary, studio-based curriculum taught by a multi-disciplinary faculty. Coursework is capped by the required Advanced Travel Studio held each summer, when students experience cities and investigate specific urban issues in the context of dynamic

locations around the world, ranging from international locations such as Shanghai, Copenhagen and Barcelona, to North American cities such as Washington, D.C.

The program is organized around three central themes reinforced by core studios and seminars.

## **Sustainable Cities**

We take a holistic approach to designing the livable city. Since more than half the world's population lives in cities, with that number continuing to increase significantly, we must anticipate the social, economic and ecological impacts of our design decisions. In preparation for a post-carbon era, we address concerns related to climate change, energy usage, public health, food production and resource availability through an integrated approach to the design of urban settlements. Our students re-imagine and re-interpret urban systems - from transportation networks to hydrological systems to zoning codes to social movements - with the goal of creating cities that are at once socially just, economically diverse and ecologically resilient. These challenges are unprecedented and must be urgently addressed: we believe that urban designers are ideally positioned to meet them head-on.

## **Local to Global**

Urban designers must recognize the interrelated local and global impacts of their actions and understand the interdisciplinary nature of urban problems. We address design issues at all scales, from the individual public space to the neighborhood and city to the regional and global. Our approach acknowledges that all sites are embedded within larger systems, an ecologically grounded concept we engage in all our studios. In the Fall and Spring studios, students examine the Denver metropolitan area, a progressive, yet prototypical, urban laboratory experiencing significant growth and development and home to every urban condition imaginable, from dense downtown infill to sprawling edge cities to the New Urbanism-inspired Stapleton airport brownfield redevelopment. The Front Range is a national leader in design and planning innovation, as represented by the multi-billion dollar FasTracks transit project, Denver's groundbreaking citywide form-based code, Boulder's open space acquisition policies and energy municipalization effort, Arvada's GEOS net-zero energy neighborhood, and Fort Collins' closed-loop brewery-oriented development. Students apply the skills and knowledge gained in their local study in the summer term in an advanced travel studio. Recent projects have studied the dense urban core of Copenhagen, Denmark, in partnership with faculty affiliated with the Danish Institute for Study Abroad (2014-16), and the role and design of streets as public spaces in Barcelona (2018).

## **Innovations in Practice**

We train our students to become critical, reflective professionals with a deep understanding of urban design theory and practice to lead contemporary urban thinking. All our graduates are prepared to address the most complex social-ecological problems of our time well with

exceptional technical, verbal and graphic communication skills. Our curriculum is informed by innovations in current practice: we undertake real projects with real clients. Each year, we bring in renowned practitioners from leading design firms to teach courses, give lectures, and serve as jurors in urban design studios. We see high demand for graduates who possess multiple talents, a broad understanding of urban planning, architecture, landscape, real estate development, and urban politics and economics, and the ability to work not only with design professionals but also engineers, policy makers, environmental scientists and the public. Students are required to select two electives from a multidisciplinary array offered in the College of Architecture and Planning. Importantly, our CAP Internship Program aims to place qualified students into internships in some of the region's top design firms. Participating firms have included: AECOM, Civitas, Inc., Design Workshop, DTJ Design, Norris Design, RNL/Stantec and Tryba Architects. Based on a competitive application process, college units including the Colorado Center for Community Development (CCCD) frequently hire MUD students as research assistants (RAs), and the departments of Architecture, Landscape Architecture and Urban and Regional Planning may hire qualified teaching assistants (TAs) from our incoming MUD students.

## Prerequisites

Students are required to hold a first professional degree in architecture, landscape architecture or urban and regional planning (e.g., BArch or BLA from an accredited program, MArch, MLA, MURP/MUP) or equivalent.

## Admissions

The Master of Urban Design program accepts applications for fall semester entry. The program does not encourage entry to the program in any spring semester due to the specific sequencing of the classes, however, current CAP students may begin classes in spring term based on advising.

CAP students can enter the MUD with advanced standing through a concurrent degree program mapped with their primary professional degree program in the College of Architecture and Planning. For more information on the MArch+MUD, MLA+MUD or MURP+MUD, visit the college website or contact the program advisor.

The priority deadline for all applicants is February 15; final deadline is March 15. The requirements the admissions committee considers are:

- Evidence of a professional degree (BArch or BLA from an accredited program, MArch, MLA, MURP/MUP or equivalent)
- At least a 3.2 undergraduate or graduate cumulative GPA
- Your statement of purpose, which should include your educational and professional goals
- Résumé (which describes your educational and professional background)

- A portfolio that includes examples of student and/or professional projects
- A list of courses that you have taken that relate to design and planning (current transcript for CAP students)
- A writing sample from previous professional or academic work
- Graduate Record Exam (GRE) scores if available (not required for admission)
- English language proficiency (TOEFL) scores are required for international applicants when English is not their first language. Please see the International Admissions website for current minimum score requirements.

## Program Requirements

The requirements for the post-professional Master of Urban Design (MUD) degree depend on your current standing and educational background. The basic study plan is a 36-semester-hour plan that includes two open elective courses. Students obtaining a first professional degree in the University of Colorado Denver College of Architecture and Planning may enroll in the MUD concurrently, with the degree to be completed at the end of their primary degree program. CAP students may receive up to 12 semester hours of advanced standing.

## Courses

The basic study plan is 36 semester hours including these core courses, plus two elective courses (could include an independent study or internship).

## Core Courses

- URBN 6610 - Design Studio I (6 semester hours)
- URBN 6611 - Design Studio II (6 semester hours)
- URBN 6612 - Advanced Travel Design Studio (6 semester hours)
- URBN 6641 - Design Process (3 semester hours)
- URBN 6642 - Design Policy (3 semester hours)
- URBN 6651 - Design Practice (3 semester hours)
- URBN 6652 - Design Seminar (3 semester hours)  
(topics vary - a prerequisite for URBN 6612)

## 30 semester hours

## Electives

Two elective courses (could include an independent study or internship)

**6 semester hours**

**Total Required: 36 hours**

**Dual Degree Programs**

# **4+1 International Studies BA to Political Science MA**

► Graduate School Policies and Procedures apply to this program.

## **Introduction**

Please click [here](#) to see Political Science department information.

Students will follow the undergraduate curriculum for International Studies and work closely with their faculty advisor to begin taking Political Science graduate level coursework as they complete their undergraduate degree. They will complete no more than 15 credits as an undergraduate that will apply to both their undergraduate and graduate degrees. Students may officially declare their intent to complete this program in either their junior or senior year, and may apply to the graduate program during their senior year. Application requirements may differ from the traditional 2 year MA, which is why students need to work closely with faculty advisors and the political science graduate program director for more information and to ensure they are following the best track to complete coursework so that they only have one year after completing the undergraduate degree, to complete the graduate requirements.

## **Program Delivery**

- This is an on-campus program.

## **Declaring This Program**

- Click [here](#) to go to information about declaring a major.
- Application process: Interested students would submit a short application to the Department any time after the first semester of their junior year. The application will include:
  - A Letter of interest that describes the student's reasons for applying into the program.
  - Undergraduate transcripts.



- The names of at least two faculty members in the CU Denver Political Science Department who can attest to applicant's advanced levels of reading, writing and analytical skills, and to their outstanding intellectual curiosity and work ethic.
- Following review and admission by the faculty, students would begin their 4+1 curriculum during the second semester of their junior year, or in a subsequent semester.

## General Requirements

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements
- CU Denver Core Curriculum
- College of Liberal Arts & Sciences Graduation Requirements

[Click here](#) for information about Academic Policies

## Program Requirements

1. A minimum of 48 undergraduate credit hours in the International Studies program and 33 graduate credits hours in Political Science must be completed to earn both an undergraduate and a graduate degree through this 4+1 program.
2. Up to 15 graduate level credit hours in Political Science may be taken by International Studies undergraduates accepted to the 4+1 program, and these credits will count both towards completion of the International Studies undergraduate degree, and the graduate degree in political science, if the student is later accepted into the graduate program.
3. A minimum of 21 semester hours must be taken from CU Denver faculty.
4. Complete all International Studies undergraduate major requirements. Refer to the undergraduate International Studies catalog page.
5. To secure admission to the Political Science graduate program, submit formal graduate application during the senior year.
6. Students must earn a minimum grade of C- (1.7) in all undergraduate major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 2.5.
7. Students must earn a minimum grade of B- (2.7) in any graduate level course for it to later be counted towards graduate degree requirements.
8. All graded attempts in required and elective courses are calculated in the major GPA. No course taken as pass/fail may be counted.

## **Program Allowances and Restrictions**

In the pathway below no more than 15 undergraduate credit hours may "double-count" for the M.A.. Elective courses must be in accordance with Graduate School Policies. Therefore, meeting with an advisor regularly is recommended. Apply into 4+1 Program any time after the first semester of junior year standing as an undergraduate.

# **4+1 International Studies to Masters in Humanities or Social Sciences**

## **Introduction**

The International Studies BA/MHMSS (Master of Humanities/Master of Social Science Program) in the College of Liberal Arts and Sciences provides an expedited interdisciplinary program of study that allows participating students to complete an interdisciplinary Bachelor degree in International Studies and an interdisciplinary Master degree in Humanities or Social Science through the MHMSS program in five years. INTS students interested in participating apply for either the MH or MSS degree no earlier than their first semester of junior-year standing as an undergraduate. Students may further choose to concentrate in one of the MH or MSS tracks. (For track information, see descriptions of the MH and MSS degree programs in this catalog.) Upon acceptance, students take five graduate-level courses beginning the second semester of their junior year (or its equivalent) and through the whole of their senior year. Because these classes "double count," they fulfill requirements for both the BA major and the Master degree in Humanities or Social Science. Students then continue graduate studies exclusively in the chosen degree plan, either MH or MSS, to complete their master degree by the end of their fifth year in CLAS at CU Denver.

## **Program Delivery**

- This is an on-campus program.

## **Declaring This Major**

### **Admissions Requirements and Process**

- Interested students should contact their INTS advisor and the MH or MSS advisor as early as possible to ensure proper planning for the five-year degree.
- To qualify, students must have a 3.0 or higher GPA in CLAS. All courses taken at the 4000- and 5000-level must be completed with at least a B or higher.

- Students may apply to the program during the semester in which they will successfully complete 90 semester hours, and should have most of their general education and major requirements completed by this time.

## **General Requirements**

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements
- CU Denver Core Curriculum
- College of Liberal Arts & Sciences Graduation Requirements
- [Click here for information about Academic Policies](#)

## **Program Requirements**

Students in the 5-year INTS BA/MHMSS Program must satisfy all existing requirements for both an undergraduate degree in CLAS with a major in International Studies and a Master of Humanities or Social Science degree. These requirements can be fulfilled through multiple possible paths through the department's curriculum:

Students must maintain a 3.0 GPA in CLAS course work.

### **Program Options**

BA/MHMSS students may choose to do a general MH or MSS degree or select a track concentration within the degree plan, including Social Justice, Philosophy and Theory, Visual Studies, Women's and Gender Studies, Ethnic Studies, International Studies, Community Health, and Society and Environment.

### **Degree Confirmation**

Students are eligible to receive a bachelor's degree once they have successfully completed 120 semester hours and all CLAS requirements. The BA/MHMSS will be conferred once the student has completed all requirements of the Master of Humanities or Master of Social Science degree, including at least 36 hours of graduate level course work.

# **4+1 Philosophy to Masters of Humanities**

## **General Requirements**

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- [CU Denver General Graduation Requirements](#)
- [CU Denver Core Curriculum](#)
- [College of Liberal Arts & Sciences Graduation Requirements](#)
- [Click here for information about Academic Policies](#)

## 4+1 Political Science BA to MA

► Graduate School Policies and Procedures apply to this program.

### Introduction

Please [click here](#) to see Political Science department information.

Students will follow the undergraduate curriculum for Political Science and work closely with their faculty advisor to begin taking Political Science graduate level coursework as they complete their undergraduate degree. They will complete no more than 15 credits as an undergraduate that will apply to both their undergraduate and graduate degrees. Students may officially declare their intent to complete this program in either their junior or senior year, and may apply to the graduate program during their senior year. Application requirements may differ from the traditional 2 year MA, which is why students need to work closely with faculty advisors and the political science graduate program director for more information and to ensure they are following the best track to complete coursework so that they only have one year after completing the undergraduate degree, to complete the graduate requirements.

### Program Delivery

- This is an on-campus program.

### Declaring This Program

- [Click here](#) to go to information about declaring a major.
- Application process: Interested students would submit a short application to the Department early on during or after the first semester of their junior year. The application will include:
  - A Letter of interest that describes the student's reasons for applying into the program.
  - Undergraduate transcripts.

- The names of at least two faculty members in the CU Denver Political Science Department who can attest to applicant's advanced levels of reading, writing and analytical skills, and to their outstanding intellectual curiosity and work ethic.
- Following review and admission by the faculty, students would begin their 4+1 curriculum during the second semester of their junior year, or in a subsequent semester.

## General Requirements

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements
- CU Denver Core Curriculum
- College of Liberal Arts & Sciences Graduation Requirements

[Click here for information about Academic Policies](#)

## Program Requirements

1. A minimum of 39 undergraduate hours and 33 graduate hours of Political Science credits hours must be completed to earn both an undergraduate and a graduate degree through this 4+1 program.
2. A minimum of 21 semester hours must be taken from CU Denver faculty.
3. Up to 15 graduate level credit hours in Political Science may be taken by Political Science undergraduates accepted to the 4+1 program, and these credits will count both towards completion of the undergraduate degree, and the graduate degree in political science, if the student is later accepted into the graduate program.
4. Complete all Political Science undergraduate major requirements. Refer to the undergraduate Political Science catalog page.
5. To secure admission to the Political Science graduate program, submit formal graduate application during the senior year.
6. Students must earn a minimum grade of C- (1.7) in all undergraduate major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 2.0.
7. Students must earn a minimum grade of B- (2.7) in any graduate level course for it to later be counted towards graduate degree requirements.
8. All graded attempts in required and elective courses are calculated in the major GPA. No course taken as pass/fail may be counted.

## Program Allowances and Restrictions

In the pathway below no more than 15 undergraduate credit hours may "double-count" for the M.A.. Elective courses must be in accordance with Graduate School Policies. Therefore, meeting with an advisor regularly is recommended. Apply into 4+1 Program any time during or after the first semester of junior year standing as an undergraduate.

# 4+1 Sociology BA to MA

## Introduction

The Combined BA/MA (4+1) program in Sociology provides a coherent, progressive educational experience that prepares students for either immediate entry to a master's level career or continued study in a PhD program. The BA/MA application process is competitive, as the program is designed for highly-qualified students who are capable of an expedited program. Students choose from two options for their Comprehensive Paper that completes the master's degree: either a 6-credit thesis, or a 3-credit applied experience plus a 3-credit paper. The program also offers 3 concentration areas (Crime, Law & Deviance; Health & Society; Family, Social Services & Community) for students seeking specialization in high-demand career areas.

## Program Delivery

- This is an on-campus program.

## Declaring This Major

- Consult your advisor about declaring this major

## General Requirements

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements
- CU Denver Core Curriculum
- College of Liberal Arts & Sciences Graduation Requirements
- [Click here for information about Academic Policies](#)

## Program Requirements

### Tier 1 Knowledge

Take **all** of the following required undergraduate courses:

- SOCY 1001 - Understanding the Social World
- SOCY 2001 - Inequalities in Social World
- SOCY 3115 - Quantitative Methods & Analysis
- SOCY 3119 - Qualitative Methods
- SOCY 3140 - Sociological Theory

Take **all** of the following required graduate courses:

SOCY 5000 must be the first graduate course taken (may be taken concurrently with other graduate courses); SOCY 5024 must be taken before SOCY 5183 and SOCY 5193. Students must earn a *B* or better in all graduate core courses.

- SOCY 5000 - Professional Seminar: Sociological Inquiry
- SOCY 5016 - Social Theory
- SOCY 5024 - Seminar: Research Methods I
- SOCY 5183 - Seminar: Quantitative Data Analysis
- SOCY 5193 - Seminar: Qualitative Data Analysis

### **Tier 2 Knowledge Applied to Substantive Areas**

Five elective courses, one of which may be taken at the undergraduate level. Graduate credit requirements are fulfilled only for those courses earning a minimum grade of B-.

### **Tier 3 Comprehensive Paper**

Take one of the following Comprehensive Paper options:

- SOCY 5955 - Master's Thesis **or**
- SOCY 5939 - Internship **or**
- SOCY 5840 - Independent Study: SOCY **and**
- SOCY 5964 - Master's Report

### **Plans of Study**

#### **THESIS OPTION REQUIREMENTS**

Core course requirements	15 Credits
Four substantive area courses	12 Credits
Master's Thesis	6 Credits

- SOCY 5955 - Master's Thesis

BA/MA Thesis Option Total: 53 Credits

#### **APPLIED PROJECT REQUIREMENTS**

Core course requirements	15 Credits
Four substantive area courses	12 Credits

Applied Experience (internship or independent study)	3 Credits
Master's Paper	3 Credits
<ul style="list-style-type: none"> <li>○ SOCY 5939 - Internship</li> <li>○ SOCY 5840 - Independent Study: SOCY</li> <li>○ SOCY 5964 - Master's Report</li> </ul>	
BA/MA Applied Project Total: 53 Credits	

### **Substantive Area Requirements (12 credits for both options)**

Students can take an unlimited number of sociology graduate (5000-level) seminars to fulfill their 15 elective credits requirement, or a combination of the following:

- Independent study: maximum 6 semester hours
- Graduate level courses in other departments: maximum 6 semester hours
- Internship: maximum 3 semester hours

For further information about the Department of Sociology or the MA program, visit the Sociology website.

# 5 Year BA/BS and Masters in Public Health

## Introduction

Please click [here](#) to see Health and Behavioral Sciences department information.

Please click [here](#) to see the overview of the Public Health undergraduate program.

Please click [here](#) to see the overview of the Masters in Public Health graduate program.

These degree requirements are subject to periodic revision by the academic department, and the College reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their major advisor and CLAS advisor to confirm the best plans of study before finalizing them.

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**Telephone:** 303-315-7150

**Fax:** 303-556-8501

**Email:** Meng.Li@ucdenver.edu

**CSPH Contact:** Chloe Bennion, Student Affairs and Academic Operations Director

**Office:** Fitzsimons Building, Room E-3301

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**Email:** Chloe.Bennion@cuanschutz.edu



## Program Delivery

- This is an on-campus program.

## Declaring This Major

- Click here to go to information about declaring a major.
- To be eligible, students must be declared PBHL majors (BA or BS).
- Ideal candidates will have a GPA of 3.5 or higher, and will have completed a minimum of 12 credit hours toward their undergraduate PBHL degree, including Introduction to Public Health (PBHL 2001), General Biology I with lab (BIOL 2051/2071) and General Biology II with lab (BIOL 2061/2081), each completed with grades of B+ or higher.
- Complete an application via SOPHAS EXPRESS(NOTE: GREs are not required). Students should apply by the January preferred deadline in their Sophomore or Junior year.
- Upon application, declare a provisional MPH concentration (NOTE: some concentrations may establish additional eligibility criteria).

## General Requirements

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements
- CU Denver Core Curriculum
- College of Liberal Arts & Sciences Graduation Requirements
- Click here for information about Academic Policies

## Program Requirements

1. Undergraduate degree requirements follow either the BA (here) or BS (here).
2. Students in this program will be conferred both degrees (BA or BS, and MPH) simultaneously upon completion of all requirements.
3. Each class must be completed with a grade of C- or higher to count towards the major, and students must maintain a minimum 3.5 GPA in the undergraduate major and MPH courses.
4. The following are exceptions and/or substitutions that are applicable to the BA/BS requirements for students in the BA/BS - MPH program:

Take the following Core course:

- PBHL 2001 - Introduction To Public Health (in lieu of PUBH 6600 requirement for MPH program)

Take **two** graduate-level classes from the following list, which will count toward both degrees:

- PBHL 3001 - Introduction to Epidemiology can be replaced by EPID 6630
- PBHL 3020 - Introduction to Environmental Health can be replaced by EHOH 6614
- PBHL 3030 - Health Policy can be replaced by HSMP 6601
- PBHL 4040 - Social Determinants of Health can be replaced by CBHS 6610

Take the following Quantitative Methods course:

- MATH 5830 - Applied Statistics (in lieu of BIOS 6601 requirement for MPH program, counts towards both degrees)

#### **Additional Notes**

1. To facilitate timely completion of the program, students are expected to take 6 credits in each of 2 summers.
2. If students apply late to this program, (including having already completed additional PBHL core requirements), they may not be able to benefit from all of the substitution-based time savings, and therefore may not be able to complete the program in 5 years.

## **5 Year Mathematics BS/Statistics MS**

### **Introduction**

This is a unique program where a student can obtain both a B.S. in Mathematics and M.S. in Statistics in five years through a specialized course sequence. The program requires 12 fewer credits than if both degrees were earned separately.

### **Program Delivery**

- This is an on-campus program.

### **Declaring This Major**

- Work with your advisor to declare this major.

### **General Requirements**

To earn a bachelor's degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements
- CU Denver Core Curriculum
- College of Liberal Arts & Sciences Graduation Requirements
- [Click here for information about Academic Policies](#)

## Program Requirements for Mathematics BS

1. Students must earn a minimum grade of C- (1.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 2.25. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail.
2. Students must declare their intent to complete this program during their junior or senior year, after completing MATH 1401, 2411, 2421, 3000, 3191, and 3382.
3. The semester you graduate, you must:
  - Complete the MFAT Exam and participate in an exit interview. These requirements will be scheduled through the department Administrative Assistant
  - Complete a senior survey.
4. To graduate as a Mathematics major, must have a minimum of 30 hours of resident credit and at least 15 upper-division mathematics credits must be taken at CU Denver.
5. Students with at least a 3.5 major grade point average, at least 3.2 overall grade point average, and who have done an honors project are eligible to graduate with honors. See an advisor (or the honors advising sheet) for details.

Take **all** of the following Mathematics courses:

- MATH 1401 - Calculus I
- MATH 2411 - Calculus II
- MATH 2421 - Calculus III
- MATH 3000 - Introduction to Abstract Mathematics
- MATH 3191 - Applied Linear Algebra
- MATH 3382 - Statistical Theory
- MATH 4310 - Introduction to Real Analysis I
- MATH 5310 - Probability
- MATH 5320 - Introduction to Mathematical Statistics
- MATH 5387 - Applied Regression Analysis
- MATH 6330 - Workshop in Statistical Consulting

Take **one** of the following programming courses:

- MATH 1376 - Programming for Data Science or CSCI 1410 - Fundamentals of Computing
- CSCI 1411 - Fundamentals of Computing Laboratory

Take **two** additional MATH classes (and at least 6 credits) above 3000 excluding 3040, 3195, 3511, 3800, 4012, 4013, 4014, 4015 and 4830.

## Program Requirements for Statistics MS

1. In the semester in which the student intends to complete their BS, students must apply for admission into MS in Statistics Program. They should have declared their intent to complete this program to the Director of the Program in Statistics after completing MATH 1401, 2411, 2421, 3000, 3191, and 3382.
2. Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0, for all courses that will apply to the MS. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail.
3. Students must present 30 hours of course work (which are broken into 4 components as detailed below) for the M.S. degree.
4. At least 24 of these hours must consist of graduate level (numbered 5000 or higher) courses with the MATH prefix.
5. The remaining 6 hours must be either MATH courses numbered 5000 or above or pre-approved courses outside the department numbered 4000 or above.
6. Students must complete a written project and pass a final oral exam.

Note that the MATH 5310, MATH 5320, MATH 5387, and MATH 6330 courses used for the B.S. portion of the degree apply to the 30 hours of course work and satisfy the core requirement discussed below.

Up to 9 semester hours of prior course work may be transferred in (subject to approval); these must be at the 5000 level or above with a B- or better grade. Courses already applied toward a prior degree (graduate or undergraduate) cannot be used toward the M.S. degree in Statistics. Additionally, the following MATH courses will NOT count toward a graduate degree: MATH 5000-5009, 5010, 5012-5015, 5017, 5198, 5250, and 5830.

Following completion of course work, all students must complete a written project and pass a final oral exam. The project is developed as a student-centered independent research component within MATH 5960 unless the student has chosen the thesis option. For students choosing the thesis option, 4 to 6 hours (of the 30 required hours) may be devoted to the writing of a thesis through MATH 5950. According to Graduate School policies, Masters students, whether enrolled full-time or part-time, must complete all degree requirements

within 7 years of matriculating into the graduate program.

The MS degree in Statistics consists of 4 components: 1) core courses, 2) statistics electives, 3) other electives, and 4) MATH 5960 (Master's project) or MATH 5950 (Master's thesis).

The **4** *core courses* include:

- MATH 5310 - Probability
  - MATH 5320 - Introduction to Mathematical Statistics
  - MATH 5387 - Applied Regression Analysis
  - MATH 6330 - Workshop in Statistical Consulting
- and are satisfied during the completion of the B.S. portion of the degree.

Students must take **at least three** additional *statistics electives* courses from the list below:

- MATH 5394 - Experimental Designs
- MATH 5792 - Probabilistic Modeling
- MATH 6101 - Uncertainty Quantification
- MATH 6380 - Stochastic Processes
- MATH 6384 - Spatial and Functional Data Analysis
- MATH 6388 - Statistical and Machine Learning
- MATH 7393 - Bayesian Statistics
- MATH 7384 - Mathematical Probability
- MATH 7386 - Monte Carlo Methods
- MATH 7826 - Topics in Probability and Statistics

Additional courses given prior approval by the student's advisor and the Director of the Program in Statistics

Students must take **two** *Other Electives*: Any MATH prefix course that can be used for an M.S. or Ph.D. degree in Applied Mathematics can be used as another Elective. While these courses could be additional statistics-focused courses, the added flexibility allows students to direct their coursework into other areas of mathematics and/or science. The following courses will not count toward the M.S. in Statistics: MATH 5000-5010, MATH 5012-5015, MATH 5017, MATH 5198, MATH 5250 and MATH 5830.

Students must take either MATH 5950 or MATH 5960 as part of completing their written project.

# Bioengineering Dual MS-MBA

► Graduate School Policies and Procedures apply to this program.

## Master of Science (MS) - Master of Business Administration (MBA) Dual Degree Program

We offer a dual MS-MBA in partnership with the CU Denver Business School. Please contact either program for more information and advising. Students registered in other MS programs in the University of Colorado system may be able to combine the two degrees; please contact us at [bioengineering@ucdenver.edu](mailto:bioengineering@ucdenver.edu) for more information.

# Bioengineering MD-MS

We offer an MD-MS in bioengineering in partnership with the University of Colorado School of Medicine. This dual degree option is available to current CU medical students only. Prospective students should contact the department at [bioengineering@ucdenver.edu](mailto:bioengineering@ucdenver.edu) as early in their medical school training program as possible for more information and advising.

# Bioengineering MD-PhD

► Graduate School Policies and Procedures apply to this program.

For students already enrolled or accepted into the Medical Scientist Training Program (MSTP) in the School of Medicine at the University of Colorado Anschutz Medical Campus. Degree completion in 7-8 years with highly individualized training pathway and a multidisciplinary research dissertation. Please contact us for advising.

# Business Administration/Business MBA/MS

The Business School also offers MBA/MS dual degree programs for each function of business. The program consists of a minimum of 66 semester hours of graduate work and leads to both an MBA degree and an MS degree, which must be completed within seven years and one semester. See MS program pages for a list of functional areas. Contact a graduate academic advisor for details, 303.315.8200.

# **Business Administration/Medicine MBA/MD**

The MBA/MD is for medical students at the University of Colorado School of Medicine who wish to pursue a career in administrative medicine or who seek additional training in administration or business. The program is designed to be completed in five years, at which time both the MD and MBA degrees would be awarded. Candidates for the MBA/MD complete 36 semester hours of course work in the business school and all requirements for the MD.

# **Business Administration/Urban and Regional Planning MBA/MURP**

This dual degree enables students to obtain both the Master of Urban and Regional Planning offered by the College of Architecture and Planning and the Master of Business Administration offered by the Business School upon completion of 78 semester hours. The dual degree program is composed of the core curricula in each program plus a set of electives jointly approved by the student's advisors.

# **Business/Business MS/MS**

Students may concurrently pursue dual MS degrees in any two fields of business. The program consists of a minimum of 51 semester hours of core course work, which must be completed within a period of seven years and one semester. In addition, candidates for the dual degree must satisfy all common body of knowledge (CBK) and background requirements prescribed for each degree. Waivers may be approved for some of the CBK or background upon transcript evidence of equivalent undergraduate or graduate course work. For more information contact a graduate academic advisor, 303-315-8200.

# **Chemistry BS/MS**

While students are completing a BS degree in chemistry or biochemistry, they may also complete some of the requirements for an MS degree in chemistry by participating in the BS/MS program, using the following guidelines:

- The student must apply and be accepted for participation in the BS/MS program prior to completion of the BS degree in consultation with both the undergraduate and graduate advisors.

- Up to 12 semester hours of graduate-level course work may be taken as an undergraduate and applied toward the MS degree. This course work may not be applied toward the BS degree or ACS certification requirements for the BS degree.
- In addition, up to 3 semester hours of directed research may be applied toward the graduate degree if that research is expanded and continued for a portion of the master's thesis research. This requires the approval of the student's graduate research advisor in chemistry, and the chemistry graduate program director.
- The chemistry department will waive the requirement for placement examinations in each area of chemistry for which the student has completed the undergraduate sequence of courses and laboratories at the Downtown Campus with grades of *B (3.0)* or better for each course.
- The student must apply for and be admitted to the MS program in chemistry beginning the semester immediately following completion of the BS degree in chemistry at the Downtown Campus.

The BS/MS program allows undergraduate students who have begun their research as undergraduates to complete up to 12 semester hours (with approval of the graduate dean) toward the 30 semester hours required for a Plan I MS degree in chemistry while they are still completing their BS degree. This makes it possible for students to complete an MS degree in chemistry in only one year beyond the BS degree in chemistry. Students entering the MS program through the BS/MS program option must fulfill all of the requirements of the Plan I or Plan II MS degree programs.

## CLAS, BA/MPA

### Introduction

The Pathway BA/MPA degree program offered by the College of Liberal Arts and Sciences and the School of Public Affairs provides students the opportunity to complete both bachelor's and master's degrees in five years rather than the usual six years. The program combines undergraduate general education and major studies with a specialized curriculum in public affairs and strives to develop intellectual and professional skills in a coordinated manner. The BA/MPA program decreases the time and number of semester hours required to earn both degrees by allowing students to count graduate level courses in the School of Public Affairs toward the bachelor's degree requirements. The program is designed to give students an opportunity to prepare for professional positions and advancement with federal, state or local governments, nonprofits or private sector firms concerned or involved with public affairs.

### Admissions Requirements and Recommendations



Interested students should contact their CLAS advisor and the School of Public Affairs' MPA director as early as possible to ensure proper planning for the five-year degree. To qualify, students must have a 3.5 or higher GPA in CLAS.

Students may apply to the program during the semester in which they will successfully complete 90 semester hours, and should have most of their general education and major requirements completed by this time. Students must complete all the required MPA application materials for the School of Public Affairs.

## **Program Requirements**

Students must fulfill all the requirements for graduation for CLAS:

- Total of 120 hours (includes hours in public affairs)
- 30 hours in the core curriculum
- 30-48 hours to satisfy major requirements
- Writing proficiency (1 - 7 hours)
- Mathematics proficiency (0 - 3 hours)
- Level III foreign language (0 - 13 hours)
- It is highly recommended that students complete a course in American government, statistics and economics before applying to the MPA program

Students must maintain a 3.5 GPA in CLAS coursework.

Students may complete a maximum of 18 semester hours of SPA graduate coursework while classified as an undergraduate student.

Students must fulfill all the requirements for graduation from SPA:

- Total of 36-39 semester hours in public affairs
- Six core courses (PUAD 5001 - PUAD 5006)
- Five elective courses at the graduate level (5000 and 6000 level courses)
- Nine of the 15 elective semester hours must be PUAD courses
- An internship (3 hours) is required from those who do not have significant work experience in the field
- Successful completion of the capstone course taken in a semester AFTER all core courses are completed. A thesis option is available. Interested students should contact their SPA faculty advisor.

Students must maintain a 3.0 or higher GPA in public affairs course work.

## **Program Options**

BA/MPA students may choose from any CLAS major.

BA/MPA students may choose to do a general MPA or select a MPA concentration in local government, nonprofit management, environmental policy, emergency management and homeland security or domestic violence.

### **Degree Confirmation**

Students are eligible to receive a bachelor's degree once they have successfully completed 120 semester hours and all CLAS requirements. The BA/MPA will be conferred once the student has completed all requirements of the master of public administration degree, including at least 36 hours of graduate level coursework.

# **Criminal Justice, BA/MCJ**

## **Introduction**

The pathway Bachelor of Arts/Master of Criminal Justice program is designed to allow students to work concurrently toward the bachelor's and master's programs. Graduate credit hours earned while enrolled in the pathway program can be counted toward both the Bachelor of Arts and Master of Criminal Justice. This program offers high-achieving students the opportunity to complete their undergraduate and graduate degrees within an expedited time frame. The undergraduate and graduate degrees are conferred upon completion of each of the degree's requirements.

## **Program Delivery**

- Courses are offered on campus, online and in hybrid formats.

## **Declaring This Major**

- Please contact [spa.advising@ucdenver.edu](mailto:spa.advising@ucdenver.edu)

Both current CU Denver students and new transfer students are eligible to apply to the Criminal Justice BA/MCJ after meeting the following:

- Currently enrolled in the School of Public Affairs as a criminal justice major
- Completed the University of Colorado Denver's undergraduate core curriculum
- Completed 60 semester credit hours
- Completed the following 12 semester credit hours in criminal justice:
  - CRJU 1000 - Criminology and Criminal Justice: An Overview
  - CRJU 2041 - Criminological Theory
  - CRJU 3100 - Research Methods
  - CRJU 3150 - Statistics for Criminal Justice

- Transfer criminal justice courses must have been approved and accepted toward the major.
- Minimum 3.0 cumulative GPA
- Minimum 3.5 cumulative GPA in criminal justice courses

## Program Requirements

General BA/MCJ Degree Program Requirements:

- 144 total semester credit hours successfully completed
- 37-38 semester credit hours in the general education core curriculum
- 46-48 semester credit hours in general electives
- 21 semester hours of undergraduate criminal justice coursework
- 18 upper-level (3000 or higher) semester credit hours in criminal justice
- 45 total semester hours of upper-division coursework (3000 and above)
- Minimum 3.0 CU cumulative grade point average in undergraduate criminal justice courses
- Full acceptance to the Graduate School and the Master in Criminal Justice program
- Minimum 36 semester hours of graduate-level coursework (5000 and above)
- Minimum of 30 hours of resident credit; 21 out of the last 30 hours in resident coursework
- Minimum of a B (3.0) in each required core MCJ course
- Minimum of 3.0 CU cumulative grade point average in all graduate level courses
- Successful completion of the master of criminal justice capstone or thesis
- Fulfillment of all college and major requirements

## Economics BA/MA

### Introduction

Please click [here](#) to see Economics department information.

### Program Delivery

- This is an on-campus program.

### Declaring This Major

- Students should meet with the graduate program director and undergraduate faculty advisor to learn more about admissions requirements for this program.

### General Requirements

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements
- CU Denver Core Curriculum
- College of Liberal Arts & Sciences Graduation Requirements
- [Click here for information about Academic Policies](#)

## Program Requirements

### Course Requirements

Undergraduate required courses (30 or 31 credit hours):

- ECON 2012 - Principles of Economics: Macroeconomics
- ECON 2022 - Principles of Economics: Microeconomics
- ECON 4071 - Intermediate Microeconomic Theory
- ECON 4081 - Intermediate Macroeconomic Theory
- MATH 3382 - Statistical Theory

**OR**

- ECON 3811 - Statistics with Computer Applications

Undergraduate electives (9 credit hours):

- Three undergraduate economics courses and at least 2 of them must be at 4000-level

Graduate courses (18 credit hours):

- ECON 5073 - Microeconomic Theory
- ECON 5083 - Macroeconomic Theory
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II
- ECON 6053 - Seminar In Applied Economics
- ECON 6054 - Seminar In Applied Economics II
- ECON 6073 - Research Seminar

The "Seminar in Applied Economics" (ECON 6053, 6054) are 8-week 1.5 credit modules. After completing 3 credit hours of ECON 6053/6054 as part of the economics core, additional ECON 6053/6054 courses may be counted as electives

Graduate electives (9 credit hours):

Any course numbered 5000 or higher with an ECON prefix.

Total economics/mathematics credit hours = 66 or 67

Total credit hours for the combined degrees = 135

**Note:** The mathematics courses that students take also fulfill some of CU Denver (up to 8 hours) and CLAS (up to 4 hours) graduation requirements.

- MATH 2411 - Calculus II
- MATH 2421 - Calculus III
- MATH 1401 - Calculus I

## Dual Credits

Students need to take only three electives at the undergraduate level; the three electives taken at the graduate level are double counted in fulfilling both BA and MA graduation requirements. ECON 5803 (Graduate Mathematical Economics) is waived or can be counted as one graduate-level elective. The total dual credits are 12 hours.

## Additional Graduation Requirements

All other grade and GPA requirements towards the BA and MA degrees (e.g., a C- or better is needed in each undergraduate-level required course and a B- or better is needed in each graduate-level required course). Students are expected to meet all course prerequisites. Students will earn the BA degree in their fourth year upon completing all the requirements for the BA degree. Students are expected to be admitted to the Graduate School in their final two semesters prior to earning the MA degree.

## Admission Requirements

1. Meet all general admission requirements of the Graduate School
2. Be a current CU Denver Economics major with a GPA of 3.5 or better
3. The following courses must have been completed at CU Denver with a grade of B+ or better: MATH 2411, MATH 2421, ECON 4071, and ECON 4811
4. Students should apply in the semester when requirement 3 is satisfied (typically in the end of the fall semester of their junior year - as in the sample curriculum below)
5. Students who do not meet requirements 2 and 3 may apply, but must submit GRE scores and two letters of recommendation; otherwise both are waived
6. To apply, students should submit a regular application to the MA ECON program here: <https://application.admissions.ucdenver.edu/apply/>. Students who meet the admission requirements are not required to pay the application fee, submit GRE scores, letters of recommendation, or a personal statement. Students must contact the graduate advisor after their application is submitted to have this material waived (brian.duncan@ucdenver.edu)

# Economics MA/Applied Mathematics MS Dual Degree, with a focus in Applied Statistics

► Graduate School Policies and Procedures apply to this program.

**Graduate Advisors:** Brian Duncan and Hani Mansour

The fields of mathematics and economics are inextricably linked. In economics, mathematics and statistics are used extensively in theory construction, tests of existing theories and discovery of regularities to inform new theories. Economics also gives mathematicians/statisticians new challenges, new outlets and new ideas to incorporate in mathematics. These complementarities have long been recognized and economics graduate students have always been advised to take advanced courses in statistics.

A "dual" degree means that students who complete the program earn two master's degrees: MA in economics and MS in applied mathematics. Students interested in completing the dual degree in economics and applied mathematics must apply separately to each program, meet the admission requirements of each program, and be accepted by each program. If one program accepts a student for the dual degree but the other program does not, then the student may not graduate under the dual degree program. Students may apply to both programs at the same time or apply to the economics program first, and then to the applied math program after their first semester, or vice versa. Both programs must be completed in the same semester to take advantage of the dual degree program. Further information about this program can be obtained from either the Department of Economics or the Math Department.

[Click here for admissions requirements for the MA program in Economics](#)

[Click here for admissions requirements for the MS program in Applied Mathematics](#)

There are an increasing number of economics MA students wishing to obtain graduate training and a degree in statistics. Having an MA degree in economics and an MS degree in Applied Mathematics will make a student highly employable in the job market and provide them an edge in applying for elite PhD programs.

## Degree Requirements

The requirements for the dual degree in economics and applied mathematics include completing 21 credit hours in ECON and 21 credit hours in MATH (42 total credit hours).

Students are expected to meet all course prerequisites. ECON 5803 – Mathematical Economics is a prerequisite for ECON 5073 - Microeconomic Theory and ECON 5813 - Econometrics I. This

prerequisite requirement is waived for students who are currently admitted to the MS Applied Mathematics program.

A grade of B- or better is required in all courses, with a cumulative grade point average of B (3.0) or above. No course may be taken more than twice.

## Core Courses

Take all of the following courses:

- ECON 5073 - Microeconomic Theory
- ECON 5083 - Macroeconomic Theory
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II
- ECON 6053 - Seminar In Applied Economics **or** ECON 6054 - Seminar In Applied Economics II
- ECON 6073 - Research Seminar
- MATH 5070 - Applied Analysis
- MATH 5310 - Probability
- MATH 5320 - Introduction to Mathematical Statistics
- MATH 5718 - Applied Linear Algebra
- MATH 6330 - Workshop in Statistical Consulting

Take one of the following courses:

- MATH 5394 - Experimental Designs
- MATH 6376 - Statistical Computing
- MATH 6380 - Stochastic Processes
- MATH 6384 - Spatial and Functional Data Analysis
- MATH 6388 - Statistical and Machine Learning
- MATH 7384 - Mathematical Probability
- MATH 7826 - Topics in Probability and Statistics
- An additional course given prior approval by the student's advisor and the Director of the Program in Statistics.

**Total: 36 hours**

## Electives

One 5000 or higher course with a MATH prefix (**3 semester hours**), except MATH 5000-5010, MATH 5017, MATH 5198, and MATH 5250. Contact a graduate advisor in the Math Department for information about Math course requirements.

One 5000 or higher course with an ECON prefix (**3 semester hours**).

Contact a graduate advisor in the Economics Department for information about Econ course requirements.

**Total: 6 Hours**

**Dual Degree Total: 42 Hours**

## **Economics MA/Finance MS Dual Degree**

► Graduate School Policies and Procedures apply to this program

**Graduate Advisors:** Brian Duncan and Hani Mansour

For students interested in combining the quantitative skills of an economics degree with the specific applications of a business degree, we offer an MA economics / MS finance dual degree. This 42-semester-hour program is offered jointly with the Business School.

A "dual" degree means that students who complete the program earn two master's degrees: MA in economics and MS in finance. Students interested in completing the dual degree in economics and public administration must apply separately to each program, meet the admission requirements of each program, and be accepted by each program. If one program accepts a student for the dual degree but the other program does not, then the student may not graduate under the dual degree program. Students may apply to both programs at the same time or apply to the economics program first, and then to the finance program after their first semester, or vice versa. Both programs must be completed in the same semester to take advantage of the dual degree program. Further information about this program can be obtained from either the Department of Economics or the Business School.

[Click here for admissions requirements for the MA program in Economics](#)

[Click here for admissions requirements for the MS program in Finance and Risk Management](#)

The dual degree program is intended to create highly-skilled research professionals with considerable econometric skill as well as familiarity with their chosen financial institutions. Given the similarity in course work within the two programs, there can be considerable time savings for the student. Essentially, the program allows students to complete the two programs that separately would require 60 hours of course work with 42 hours of combined course work.

### **Degree Requirements**

The requirements for the dual degree in economics and finance include completing 21 credit hours in ECON and 21 credit hours in FNCE (42 total credit hours)

Students are expected to meet all course prerequisites. A grade of B- or better is required in all courses, with a cumulative grade point average of B (3.0) or above. No course may be taken more than twice.



## Core Courses

- ECON 5073 - Microeconomic Theory
- ECON 5083 - Macroeconomic Theory
- ECON 5803 - Mathematical Economics
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II
- ECON 6073 - Research Seminar
- BUSN 6640 - Financial Management
- FNCE 6300 - Macroeconomics and Financial Markets
- FNCE 6330 - Investment Management Analysis
- FNCE 6380 - Futures and Options
- OR-
- FNCE 6382 - Survey of Financial Derivatives
- OR-
- FNCE 6410 - Real Options and Decisions Under Uncertainty

**Total: 30 Hours**

## Electives

Three 6000 or higher courses with a FNCE prefix (9 semester hours), except FNCE 6290 - Quantitative Methods. Contact a graduate advisor in the Business School for information about Finance course requirements.

One 5000 or higher course with an ECON prefix (3 semester hours). Students are strongly encouraged to take 3 elective hours of ECON 6053/6054 or to meet with an economics graduate advisor to discuss how to otherwise prepare for ECON 6073 - Research Seminar. Contact a graduate advisor in the Economics Department for information about ECON course requirements.

**Total: 12 Hours**

**Dual Degree Total: 42 Hours**

# Economics MA/Public Administration MPA Dual Degree

► Graduate School Policies and Procedures apply to this program

**Graduate Advisors:** Brian Duncan and Hani Mansour

The fields of public administration and economics are inextricably linked. Economists provide much of the theory and analytic foundation that administrators use to evaluate and implement policy. Given that the capital of the state of Colorado is in Denver, there is great need for administrators that fully understand methods of program evaluation and have the theoretical background needed to forecast how individuals and institutions will respond to new proposals. Similarly, good theory and practice must take into account how the proposals will be implemented and results interpreted. Both administrators and economists need to be engaged in constructive dialog for either to be fully effective.

A "dual" degree means that students who complete the program earn two master's degrees: MA in economics and MPA in public administration. Students interested in completing the dual degree in economics and public administration must apply separately to each program, meet the admission requirements of each program, and be accepted by each program. If one program accepts a student for the dual degree but the other program does not, then the student may not graduate under the dual degree program. Students may apply to both programs at the same time or apply to the economics program first, and then to the public administration program after their first semester, or vice versa. Both programs must be completed in the same semester to take advantage of the dual degree program. Further information about this program can be obtained from either the Department of Economics or the School of Public Affairs.

[Click here](#) or admissions requirements for the MA program in Economics

[Click here](#) for admissions requirements for the MPA program in Public Administration

## **Degree Requirements**

The requirements for the dual degree in economics and public administration include completing 21 credit hours in ECON and 27 credit hours in PUAD (48 total credit hours).

Students are expected to meet all course prerequisites. A grade of B- or better is required in all courses, with a cumulative grade point average of B (3.0) or above. No course may be taken more than twice.

### **Economics Core Courses (15 Hours)**

- ECON 5073 - Microeconomic Theory
- ECON 5083 - Macroeconomic Theory
- ECON 5803 - Mathematical Economics
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II

### **Public Administration Core Courses (18 credits)**

- PUAD 5006 - Public Service Leadership and Ethics

- PUAD 5008 - Evidence-Based Decision-Making
- PUAD 5001 - Introduction to Public Administration and Public Service
- PUAD 5002 - Organizational Management and Behavior
- PUAD 5003 - Research and Analytic Methods
- PUAD 5004 - Economics and Public Finance
- PUAD 5005 - The Policy Process and Democracy
- PUAD 5503 - Public Budgeting and Finance

## **Economics Electives (3 or 6 hours)**

Any course numbered 5000 or higher with an ECON prefix. Students planning on taking ECON 6073 are strongly encouraged to take 3 elective hours of ECON 6053/6054.

## **Public Administration Electives (6 or 9 hours)**

Any course numbered 5000 or higher with a PUAD prefix. Contact a graduate SPA advisor for information about their course requirements.

## **Capstone Course**

- ECON 6073 - Research Seminar
- OR**
- PUAD 5361 - Capstone Seminar

If the student takes ECON 6073, then 3 hours of elective credits must come from Economics and 9 from SPA. If the student takes PUAD 5361, then 6 hours of elective credits must come from Economics and 6 from SPA.

## **Finance/Economics MS/MA**

Students may concurrently pursue an MA in Economics offered by the College of Liberal Arts and Sciences and the MS in Finance offered by the Business School. Students must complete 27 semester hours of a combination core, 15 semester hours of combination electives and 3 semester hours of a 5000- or 6000-level economics elective. Students apply to each program separately and admission into one of the programs does not guarantee admissions into the second program.

# Political Science MA / Master of Business Administration (MBA) Dual Degree

► Graduate School Policies and Procedures apply to this program.

In the 21<sup>st</sup> century, the fields of business administration and political science intersect, in that sustainable business development requires an understanding of the political environment, while political theory and practice must address the role of the business community in economic development. Providing students with both the business foundation and political knowledge enhances their ability to succeed in our ever-changing political world.

The CU Denver Master of Arts in Political Science (MA) degree offers an in-depth understanding of the political environment, locally, nationally and globally, emphasizing the development of academic and practical skills in key areas of the discipline, and centering on the major fields of American politics, comparative politics, international relations, political theory and public policy. The CU Denver Master of Business Administration (MBA) degree provides a strong foundation in business knowledge in such areas as organizing teams, developing marketing plans, using data analysis and technology in decision making, economics, financial management and strategic planning. The MBA develops skills required for competent and responsible administration of an enterprise viewed in its entirety, within its social, political and economic environment.

The Dual Master's Degree in Political Science (MA) and Business Administration (MBA) is designed for students whose interests overlap business and politics or business and international affairs. This program is jointly sponsored by the Department of Political Science of the College of Liberal Arts and Sciences and the Business School. This program enables students to simultaneously earn an MA in Political Science with an MBA.

The dual degree program provides a more comprehensive education to the next generation of professionals in the non-profit sector, corporate arena and governmental organizations. Dual degree students are able to complete both degree programs in less time, and with fewer total credit hours (66 for both), than if both degrees were pursued separately (48+33 = 81). The program keeps the core of each program intact, including some electives from both programs, and enables students to choose two additional electives from either business or political science to best suit their career and personal goals. Furthermore, the interactions between the students enrich the students in both programs, as well as the organizations that employ them.

## Admission Requirements

Students must apply separately to, meet the admission requirements of, and be accepted by each program. It is possible for students currently admitted to one program to learn about the dual degree and choose to apply after admission to the other program.

## **GPA Requirements**

Students must maintain a cumulative GPA of 3.0 or higher across all courses that are applied to the dual degree. Any political science course in which a student receives a final grade lower than *B-* cannot be counted toward the total credits for the dual degree. Any business course in which a student receives a final grade lower than *C* cannot be counted toward the total credits for the dual degree. All graduate courses will be included in the cumulative GPA.

## **Transfer Credits**

No more than 9 semester hours of business credits from an AACSB Business School with a grade of *B* or better and no more than 6 semester hours of political science credits may be transferred into this dual degree program. The Business School will evaluate transfer hours in business and the Political Science Department will evaluate transfer hours in political science.

## **Graduation**

Students must complete all the requirements for both programs before they apply to graduate, and must apply to graduate in the same term for both programs.

## **Degree Requirements**

### **MBA Core (30 Hours)**

- BUSN 6520 - Leading Individuals and Teams
- BUSN 6530 - Data Analytics for Managers
- BUSN 6540 - Legal and Ethical Environment of Business
- BUSN 6550 - Analyzing and Interpreting Accounting Information
- BUSN 6560 - Marketing Dynamics in the 21st Century
- BUSN 6610 - Information Systems Strategy
- BUSN 6620 - Applied Economics for Managers
- BUSN 6630 - Management of Operations
- BUSN 6640 - Financial Management
- BUSN 6710 - Strategic Management

### **International Elective (3 Hours)**

Any course numbered 6000 or higher with the INTB prefix

or ENTP 6826 - International Entrepreneurship

or any graduate-level business course that is cross-listed with an INTB prefix. Travel study offered by the Business School will also apply.

## **Political Science Core (18-21 Hours)**

- PSCI 5000 - State of the Discipline
- PSCI 5468 - Research Methods in Political Science  
Graduate Seminar in American Politics subfield  
Graduate Seminar in Comparative or International Politics subfield  
Graduate Seminar in Political Theory subfield  
PSCI 5950 - Master's Thesis (6 credits)  
OR  
PSCI 5960 - Master's Project (3 credits)

## **Political Science Electives (6-9 Hours)**

PSCI graduate seminars [must complete 6 hours if thesis, or 9 hours if project (from Political Science Core)]

## **Free Electives (6 Hours)**

Courses must be from either the Business School or Political Science department, meeting the descriptions below. A combination of both is also acceptable.

*Business Free Electives: Any course numbered 6800 or higher with a BUSN prefix or any course numbered 6000 or higher with a prefix of ACCT, DSCI, ENTP, FNCE, HLTH, INTB, ISMG, MGMT OR MKTG.*

*Political Science Electives: Any course numbered 5000 or higher with a PSCI prefix.*

# **Public Administration/Applied Geography and Geospatial Sciences, MPA/MA**

## **Introduction**

The dual Master of Public Administration/Master of Arts in Applied Geography and Geospatial Sciences degree offers students interested in working in the government or nonprofit sectors an opportunity to combine fundamental management and leadership training with highly sought-after skills in geospatial sciences, including geographic information systems, remote sensing, computer cartography, and spatial statistics. This degree may be particularly appealing for students interested in working in areas such as environmental management, disasters and hazards mitigation and emergency management, urban affairs, and public health. The structure of the degree allows students to complete both programs in less time and for less money.

## Program Requirements

- Students are required to take 19 courses, or 57 credit hours, to complete the dual degree.
- Students without pre-service experience in the government or nonprofit sectors will also be required to take a 3-credit internship course.
- Students must earn a minimum B- grade in each required course applied to satisfy degree requirements and must maintain a 3.0 cumulative GPA.
- For more detailed information about course sequencing and requirements, contact your advisor.

Students must take all **nine** of the following core courses:

- GEOG 6300 - Foundations Seminar in Human-Environmental Interaction
- GEOG 5050 - Applied Spatial Statistics
- PUAD 5001 - Introduction to Public Administration and Public Service
- PUAD 5002 - Organizational Management and Behavior
- PUAD 5003 - Research and Analytic Methods
- PUAD 5004 - Economics and Public Finance **or** PUAD 5503 - Public Budgeting and Finance
- PUAD 5005 - The Policy Process and Democracy
- PUAD 5006 - Public Service Leadership and Ethics
- PUAD 5008 - Evidence-Based Decision-Making

Students must take **four** Geospatial Science and Methods elective courses (12 hours) from the following list:

- GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing
- GEOG 5070 - Remote Sensing II: Advanced Remote Sensing
- GEOG 5081 - Cartography and Computer Mapping
- GEOG 5085 - GIS Applications for the Urban Environment
- GEOG 5090 - Environmental Modeling with Geographic Information Systems
- GEOG 5091 - Open Source Software for Geospatial Applications

- GEOG 5092 - GIS Programming and Automation
- GEOG 5095 - Deploying GIS Functionality on the Web
- GEOG 5235 - GIS Applications in the Health Sciences
- CSCI 5559 - Database Systems
- ENVS 6200 - Risk Assessment
- ENVS 6220 - Toxicology
- ENVS 6230 - Environmental Epidemiology
- CVEN 5382 - Geospatial Data Development
- CVEN 5383 - GIS Analysis -- Theory and Practice
- CVEN 5385 - GIS Relational Database Systems

Additionally, students must take **three** Geography elective courses (9 hours), including at least one graduate-level Human Geography elective and at least one graduate-level Physical Geography elective, and two graduate-level Public Administration electives (6 hours).

Internship: All students must take PUAD 6910 - Internship (3 hours), unless this requirement is waived by the program director because the student has more than one year of professional work experience in government or nonprofit organizations.

Capstone: All students must take either PUAD 5361 - Capstone Seminar OR GEOG 6800 - Community-Based Research Practicum (3 hours).

# Public Administration/Criminal Justice, MPA/MCJ

## Introduction

The fields of public administration and criminal justice are closely connected. While the MPA is a generalist degree designed to prepare graduates for a variety of positions in administration and policy analysis, criminal justice studies prepare graduates to research and work in public service organizations within the substantive policy area. By providing an opportunity for students to complete both a generalist master's degree as well as a specialist master's degree, graduates will be equipped with administrative skills applicable to a number of public service settings and deep knowledge of work that pertains to criminal justice settings.

## Admission



Students pursuing the joint degree program must apply and be admitted to each of the programs. If one program accepts the student for the dual degree but the other program does not, then the student will not be accepted for the dual degree. It is possible for students currently admitted to one program to learn about the dual degree and choose to apply after admission to the other.

The MPA and MCJ Program Directors serve as advisors for this program. Interested applicants should consult one of the Program Directors before applying.

### **Course Requirements**

Students enrolled in the dual degree program must complete a minimum of 24 credit hours in each of the two programs (not counting Internship or Field Study if required). Because each program requires 36 (not counting Internship or Field Study) credit hours, the student will be able to complete 48 hours and earn two degrees. This means that the student can earn two degrees by completing 66 percent of the credit hours that would be required if the student were pursuing each degree separately.

Interested students should contact the School of Public Affairs directly for specific information on course sequencing and requirements.

# **Public Administration/Economics, MPA/MA**

## **Introduction**

The fields of public administration and economics are inextricably linked. Economists provide much of the theory and analytic foundation that administrators use to evaluate and implement policy. Given that the capital of Colorado is Denver, there is a great need for administrators that fully understand methods of program evaluation and have the theoretical background needed to forecast how individuals and institutions will respond to new proposals. Similarly, good theory and practice must take into account how the proposals will be implemented and the results interpreted. Both administrators and economists need to be engaged in constructive dialog for either to be fully effective.

Therefore, the Department of Economics of the College of Liberal Arts and Sciences and the School of Public Affairs jointly sponsor a dual degree program. This program enables students to simultaneously earn an MA degree in economics with a master of public administration (MPA).

The dual degree program provides students the opportunity to take the core of both programs and choose electives that suit their career and personal goals best. Electives in one program are allowed to count as an elective in the other. The net result is that while both degrees separately

require 66 hours, the dual degree program provides a more comprehensive and effective education in 48 hours or 73 percent of the dual degree total.

## **Degree Requirements**

### **Admission into both programs**

Students must apply separately to each program, meet the admission requirements of each program and be accepted by each program. If one program accepts a student for the dual degree but the other program does not, then the student will not be accepted for the dual degree. It is possible for students currently admitted to one program to learn about the dual degree and choose to apply after admission to either economics or SPA.

## **Other policies**

### **Minimum Grade for Graduation**

Students must maintain a GPA of 3.0 or higher across all courses that are applied to the dual degree. Students who fail to maintain a GPA of 3.00 will be placed on probation for a semester, after which they may be dropped from the dual degree program if the GPA is not increased to 3.0 or above. Additionally, any core course in which a student receives a final grade lower than B- cannot be counted toward the total credits required for the dual degree; in such a case, the student must retake the course.

### **Capstone Advising**

All students are required to complete a capstone paper and obtain the signatures of three graduate faculty. Every dual degree student, regardless of the capstone course they choose (ECON 6073 or PUAD 5361) must select a committee composed of faculty from both programs.

### **Course Credit Transfers from Other Universities**

No more than 6 hours may be transferred, and both SPA and economics program directors must approve any transfers.

## **Sample Plan of Study for the MPA/MA Economics**

Total: 48 semester hours with 21 in economics and 27 in public administration

### **Core**

(33 semester hours)

A grade of B- or better is required in all core courses, with a B average overall. No public administration course may be taken a third time.

- ECON 5073 - Microeconomic Theory
- ECON 5083 - Macroeconomic Theory
- ECON 5803 - Mathematical Economics
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II
- PUAD 5001 - Introduction to Public Administration and Public Service
- PUAD 5002 - Organizational Management and Behavior
- PUAD 5003 - Research and Analytic Methods  
or
- PUAD 5004 - Economics and Public Finance
- PUAD 5005 - The Policy Process and Democracy
- PUAD 5006 - Public Service Leadership and Ethics
- ECON 6073 - Research Seminar  
or
- PUAD 5361 - Capstone Seminar (To be completed after all other core courses or with instructor and advisor consent)

## **Electives**

(15 semester hours)

If the student takes PUAD 5361, then they are required to take 6 semester hours of economics electives and 9 semester hours of electives from SPA labeled 5000 or above.

If the student takes ECON 6073, then they are required to take 3 semester hours of economics electives and 12 semester hours of electives from SPA labeled 5000 or above.

# **Public Administration/Juris Doctorate, MPA/JD**

## **Introduction**

The School of Public Affairs and the University of Colorado at Boulder School of Law jointly sponsor a dual degree program leading to the simultaneous granting of the Master of Public Administration (MPA) and Juris Doctor (JD) degrees. The program may be of particular interest to students who wish to practice law within the public sector, obtain a senior administrative post, represent public-sector clients, represent private-sector clients in transactions with government agencies and institutions and/or develop scholarly expertise in the relationship between law and public administration.

Interested persons must separately apply to and be admitted by both SPA and the School of Law. Upon admission, students may begin full-time study at either SPA or the School of Law; however, law study must be initiated no later than the beginning of the second year of enrollment in the program, and the first year of law study must be taken in its entirety and exclusive of nonlaw course work.

Through the choice of electives, students may develop a limited substantive specialization within the study of law and public administration. The dual degree program is structured to allow for 12 semester hours from the law school to be accepted as electives in the 36-semester-hour MPA program, and 12 semester hours from SPA to be accepted into the law school's 89-semester-hour JD program. Students are thus simultaneously awarded both degrees with a cumulative total of 101 semester hours; the program therefore allows students to complete all dual degree requirements in approximately four years of full-time study. Students without prior public-sector work experience will be required to complete an internship in an appropriate governmental institution or closely related nonprofit organization.

# **Public Administration/Public Health, MPA/MPH**

## **Applying for the Program**

Students need to apply to the School of Public Health with a separate application. Students must be admitted to both programs to participate in the dual degree.

## **Course Requirements**

To complete the dual degree, students take all the core courses in each program, 9 elective credits from the School of Public Affairs, 9 elective credits from the School of Public Health, and the School of Public Health's capstone course requirements. Total credits required: 60 semester credit hours. For more information, see the course map provided on the School of Public Affairs website; [spa.ucdenver.edu](http://spa.ucdenver.edu).

## **When to Enroll**

Students should indicate intention to complete the dual degree upon application to the School of Public Affairs and simultaneously complete the application for the School of Public Health. SPA does not have a limit on the number of students who can enroll. Students already enrolled in the School of Public Affairs student may begin the SPH application right away (see the SPH for application deadlines), while taking MPA classes. It is best to get started on the application process right away, so that advising matches graduation goals.

## **Advising**

Once admitted to the dual degree program, students have an advisor from each school.

# Public Administration/Urban and Regional Planning, MPA/MURP

## Background and Purpose

Public administration and urban and regional planning have many aspects in common. To provide students with an excellent education through an understanding of both professions, the School of Public Affairs and the College of Architecture and Planning have developed a dual degree program. Students can obtain both master of public administration (MPA) and master of urban and regional planning (MURP) degrees with a minimum of 63 semester hours, as compared to a total of 87 semester hours to complete both degrees independently.

To be eligible for the dual MPA/MURP degree program, students must be admitted to each of the two schools under their respective admission procedures and standards and indicate an intention to pursue the dual degree. Students will take all the core courses and the capstone required for an MPA, plus the core and concentration requirements necessary for the MURP.

Students in each school must apply to the other school before completing 18 hours in their respective programs. Upon admission to both schools, students will be assigned an advisor in each school to work out a specific degree plan.

## Core and Elective Requirements

### Core Courses (42 semester hours)

#### MURP

- URPL 5000 - Planning History and Theory
- URPL 6220 - Advanced Research Techniques
- URPL 6215 - Analyzing the Built Environment
- URPL 5020 - Planning Law and Institutions
- URPL 6000 - Planning Project Studio

**Total: 18 Hours**

#### MPA

- PUAD 5001 - Introduction to Public Administration and Public Service
- PUAD 5002 - Organizational Management and Behavior

- PUAD 5004 - Economics and Public Finance
- PUAD 5005 - The Policy Process and Democracy
- PUAD 5006 - Public Service Leadership and Ethics

**Total: 15 Hours**

**Take one of two**

- PUAD 5003 - Research and Analytic Methods
- URPL 5040 - Urban Sustainability

**Total: 3 Hours**

## **Additional Coursework (21 semester hours)**

### **MURP**

12 hours if URPL 5510 elected, or 15 hours if PUAD 5003 elected. Courses are to be selected with MURP advisor's approval.

- URPL 5040 - Urban Sustainability
- PUAD 5003 - Research and Analytic Methods

**Total: 12-15 Hours**

### **MPA**

6 hours if PUAD 5003 elected, or 9 hours if URPL 5510 elected.

- PUAD 5003 - Research and Analytic Methods
- URPL 5040 - Urban Sustainability

**Total: 6-9 Hours**

### **Practicum**

- PUAD 5361 - Capstone Seminar (3 hours required)

**Total: 3 Hours (required)**

### **Electives**

Take one of the following or another option with MPA advisor's approval (3 hours):

- PUAD 5250 - Intergovernmental Management
- PUAD 5410 - Administrative Law
- PUAD 5440 - Negotiation and Conflict Resolution
- PUAD 5502 - Public Financial Management and Policy
- PUAD 5503 - Public Budgeting and Finance
- PUAD 5540 - Organization Development
- PUAD 5625 - Local Government Management
- PUAD 5626 - Local Government Politics and Policy
- PUAD 5631 - Seminar in Environmental Politics and Policy
- PUAD 5632 - Seminar in Environmental Management

**Total: 3 Hours**

# **Public Service/Public Administration, BA/MPA**

## **Introduction**

The Pathway Bachelor of Arts in Public Service/Master of Public Administration degree allows high-performing students to earn both degrees in an accelerated time frame, saving students both time and money. Students graduating with the Pathways BAPS/MPA degree are prepared for leadership and management roles in public service, including local, state, and federal governmental agencies and in nonprofit and nongovernmental organizations. Both the BAPS and the MPA degrees are offered fully online, providing students with the flexibility to schedule courses around the reality of family and work demands while also engaging both local and fully online students in public service opportunities in their own communities.

The BAPS/MPA degree program offered by the School of Public Affairs allows high-performing students to count 12 credit hours towards both the BAPS and the MPA degrees. Eligible students are those who have completed at least 75 credits with a minimum 3.5 GPA in the BAPS major and a 3.0 overall GPA, completed the undergraduate Core Curriculum, and who meet the other requirements listed below.

Students are eligible to receive the BA in Public Service degree once they have successfully completed 120 semester hours and all CU Denver undergraduate degree requirements. The MPA will be conferred once the student has completed all requirements of the Master of Public Administration degree.

## **Eligibility Requirements**

Both current CU Denver students and new transfer students are eligible to apply after meeting the following:

- Currently enrolled in the School of Public Affairs as a Bachelor of Arts in Public Service major
- Completed the University of Colorado Denver's undergraduate core curriculum
- Completed 75 semester credit hours
- Completed the following 15 semester credit hours in Public Service:
  - PUAD 1001 - Introduction to Public Service
  - PUAD 2001 - Management for Public Service
  - PUAD 3001 - Financial Management for Public Service
  - PUAD 3002 - Program Design, Evaluation, and Decision-Making
  - PUAD 4001 - Ethics and Public Service
  - Transfer Public Service courses must have been approved and accepted toward the major
- Minimum 3.0 cumulative GPA
- Minimum 3.5 cumulative GPA in Public Service courses

## General Requirements

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements
- CU Denver Core Curriculum
- School of Public Affairs Graduation Requirements
- CU Denver's Undergraduate Academic Policies
- CU Denver's Graduate Academic Policies
- [Click here for information about Academic Policies](#)

## Program Requirements

- Students must complete
  - A total of 141 credit hours
  - 37-38 credit hours in the general education core curriculum
  - 46-48 credit hours in general electives
  - 15 credit hours of undergraduate Public Service coursework
  - 45 credit hours of upper-division coursework (3000-level and above)
  - Minimum of 30 hours of resident credit; 21 out of the last 30 hours in resident course work



- Minimum 36 semester hours of graduate-level coursework (5000-level and above)
- Students must receive a minimum 3.0 cumulative GPA in undergraduate Public Service coursework.
- Students must be fully admitted into the Master of Public Administration program.
- Students must receive a minimum of a B- grade in each required core MPA course.
- Students must maintain a 3.0 GPA overall in all graduate-level courses.
- Students must successfully complete the MPA capstone or thesis.
- Students must fulfill all college and major requirements.
- The School of Public Affairs reserves the right to rescind a BAPS/MPA student's admittance to the pathway program if at any point the student's grade point average falls below the requirements listed above.

## Doctoral Programs

# Applied Mathematics PhD

►Graduate School Policies and Procedures apply to this program.

The Department of Mathematical and Statistical Sciences offers a PhD in Applied Mathematics. The degree is designed to give candidates a contemporary, comprehensive education in applied mathematics and to provide research opportunities in the special fields of computational mathematics, discrete mathematics, mathematics of science and engineering, operations research, optimization, probability, and statistics.

## Program Requirements

There are six phases of the PhD program. A candidate must fulfill course requirements, pass the preliminary examinations, establish a PhD committee, meet the academic residency requirement, pass the comprehensive examination and write and defend a dissertation.

- Students must complete 42 semester hours of non-thesis course work at the graduate level (up to 30 hours of this course work may be transferred in, including courses taken as part of a master's degree). In addition, 30 hours of dissertation credit must be taken. The following courses are required as part of the formal course work: MATH 5779-Math Clinic and three readings courses (1 semester hour each). Students must also satisfy a **breadth requirement** by completing a total of six graduate math courses from among several areas of mathematics, with no more than three of these courses from any one area.

- Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.25. All graded attempts in required and elective courses are calculated in the major GPA. [The following MATH courses will NOT count toward a graduate degree: MATH 5000-5009, 5010, 5012-5015, 5017, 5198, 5250 and 5830.]
- The preliminary examinations are designed to determine that students who intend to pursue the PhD program are qualified to do so. These four-hour written examinations are in the areas of applied analysis and applied linear algebra. Students must pass these exams by the start of their fourth semester.
- Six semesters of full-time scholarly work are required, as specified in the rules of the Graduate School. All students are strongly advised to spend at least one year doing full-time course work or research with no outside employment.
- The comprehensive examination is taken after completion of the preliminary exams, completion of at least three semesters of residency, and upon completion of essentially all non-thesis coursework. The exam is designed to determine mastery of graduate-level mathematics and the ability to embark on dissertation research. It consists of a six-hour written examination and an oral follow-up examination. Students must pass the comprehensive exam by the beginning of the 4th year. Within six months after passing the comprehensive examination, the candidate must present a dissertation proposal to their dissertation committee.
- Each student must write and defend a dissertation containing original contributions and evidence of significant scholarship. The dissertation defense is public and must be given before an examining committee approved by the Graduate School.

For more detailed information about the Applied Mathematics PhD, see [www.math.ucdenver.edu/phd](http://www.math.ucdenver.edu/phd).

## Bioengineering PhD

► Graduate School Policies and Procedures apply to this program.

### Doctor of Philosophy (PhD) Degree Program

The PhD is offered to students with an undergraduate or master's degree in engineering or the life sciences. Students complete the degree in three to five years with a highly individualized training pathway. All PhD students complete a dissertation, which may have an industry component.

Visit our website ([ucdenver.edu/bioengineering](http://ucdenver.edu/bioengineering)) or contact us at [bioengineering@ucdenver.edu](mailto:bioengineering@ucdenver.edu) for more information.

# Civil Engineering PhD

► Graduate School Policies and Procedures apply to this program

The PhD degree in civil engineering is offered through a coordinated program with the University of Colorado Boulder.

Specialty Areas for Degrees:

- Environmental and Sustainability Engineering
- Geotechnical Engineering
- Hydrologic and Hydraulic Engineering
- Structural Engineering
- Transportation Engineering
- Civil Engineering Systems
- Construction Engineering and Management (through the Engineering and Applied Science PhD program)

**Note:** The multidisciplinary engineering and applied science PhD is also offered through the Department of Civil Engineering.

## What is civil engineering systems?

The doctoral program in civil engineering systems has different rules than the five other traditional doctoral tracks in order to facilitate more interdisciplinary research. This doctoral track can be the degree that would follow a master's of engineering.

## Additional Doctoral Admissions Requirements

In addition to the admissions requirements listed for master's students, doctoral applicants need to have the support of a faculty advisor before they are admitted. Once doctoral students are approved by the graduate admissions committee, their application must be reviewed again by the Department of Civil, Environmental and Architectural Engineering at CU Boulder as the programs are jointly administered. Prospective PhD students should contact the Department of Civil Engineering at CU Denver to inquire about application requirements and to obtain the "Rules and Policies for the Coordinated PhD Program."

Requests for applications for graduate study in civil engineering should be addressed to

CU Denver Department of Civil Engineering  
Campus Box 113  
P.O. Box 173364  
Denver, CO 80217-3364

# Computer Science and Information Systems PhD

► Graduate School Rules to apply to this program

**Program co-directors:** Gita Alaghband (CSE) and Jiban Khuntia (Business School)

**Website:** [engineering.ucdenver.edu/CSISPhD](http://engineering.ucdenver.edu/CSISPhD)

The Computer Science and Information Systems PhD Computer Science track is awarded from the College of Engineering, Design and Computing. Students interested in the information systems track are referred to CU Denver Business School CSIS PhD program. The CSIS PhD degree is an interdisciplinary program designed to provide an infrastructure for a wide spectrum of research possibilities in the computer science and information systems field by emphasizing the scientific, algorithmic, system design and computing aspects of the field.

Our students work with research centers and researchers from a variety of disciplines, including the CU School of Medicine, chemistry, mathematics, biology, all engineering disciplines, economics, health, and education, in addition to industry and businesses. This distinctive infrastructure supports basic research in both computer science and information systems as well as the demand of computing and IT integration with all other scientific and business fields.

## Admission Requirements

For more information regarding the admission requirements for the CSIS PhD, visit [engineering.ucdenver.edu/CSISPhD](http://engineering.ucdenver.edu/CSISPhD).

## Advisor

Upon entering the program, each student chooses an advisor to provide mentoring and guidance throughout the program and work with the student to prepare a program of study. Requests to change advisors must be approved by the program co-directors, and this happens in very rare circumstances.

## Computer Science Doctoral Committee

The advisor and four other members form a doctoral committee. The advisor must be a full-time current graduate faculty member in the CSE department. The committee must contain at least one faculty member from the Business School. One committee member may be from outside the CSE department and the information systems faculty.

## Program Components

## **Plan of Study**

A list of course work and other requirements for the degree should be prepared with the advisor and then submitted to the director for approval. The successful completion of all work indicated on the plan of study is an important prerequisite for the conferring of the degree. A plan of study should be submitted for approval by the end of the first semester of the program; any future plan updates need to be approved.

## **CS Preliminary Exam**

Students are required to select three out of four core knowledge areas and pass a written exam. The exam must be taken within the first year of the program. Students may take one, two, or all three exams within the first year of their admission. Students may repeat an exam area once. A guide for the exam is available on the department website.

## **CS Comprehensive Exam**

Students will submit a paper to fulfill the Graduate School's comprehensive exam requirement. The paper should describe an area of research including literature review, problem definition, and possible methodologies/models to study a significant problem in computer science or information systems. The paper will be evaluated by a committee of three CS faculty members. An oral presentation of the paper will be open to the entire CSIS faculty. The committee may adopt additional guidelines to evaluate the paper and presentation. According to Graduate School rules, the comprehensive exam must be completed by the end of the third year in the program. In addition to these requirements, the comprehensive exam must meet the other graduate school requirements.

## **Dissertation Proposal**

A dissertation proposal after the student completes the comprehensive exam is required for the CSIS PhD program. The dissertation proposal will consist of a written proposal detailing the proposed work, advances in the proposed field, partial results, and future work toward completing the student's dissertation.

## **Dissertation Completion**

Once the dissertation proposal is approved, each student prepares and submits a dissertation. The dissertation is defended before the doctoral committee in a public meeting. Final approval for the dissertation is given by a vote of the dissertation committee after the public defense.

## **Graduation**

Upon completion of all degree requirements including the dissertation defense, the student receives the degree of doctor of philosophy in CSIS from the College of Engineering, Design and Computing.

# Computer Science and Information Systems PhD (Business School)

► Graduate School Rules apply to this program.

## CSIS Business Ph.D. Program

**Program co-director:** Jiban Khuntia (Ph: 303-315-8424, email: jiban.khuntia@ucdenver.edu)

The computer science and engineering (CSE) department in the College of Engineering, Design and Computing and the Business School offer a joint doctor of philosophy degree program in computer science and information systems (CSIS). Known as **the CSIS Ph.D., this program provides two tracks:**

- The Computer Science (CSIS CS Track) in the College of Engineering, Design and Computing.
- The Information Systems (CSIS Business Ph.D.) in the Business School.

The CSIS Business Ph.D. The program is located Business School of the University of Colorado Denver. Students admitted to CSIS Business Ph.D. will work with the Information Systems Department of the Business School at the University of Colorado Denver. The primary mission of the CSIS Business Ph.D. The program is to produce individuals who will contribute to the discovery and dissemination of scientific knowledge through continued careers in research, publishing, and teach at research-oriented universities and research-oriented non-academic institutions throughout the world.

A prospective student requiring admission to this program, need to choose the CSIS Business Ph.D. track and complete the admission. The admission to the program is decided based on the following criteria. Admission is competitive.

## Program Components

**Program Requirements:** Business School IS Ph.D. students should complete at least 60 credit units of coursework. This includes 30 units of Ph.D. level Information Systems (IS) theory-based, and research methods courses; and 30 dissertation topic units. Students are not holding a master's degree in IS, and demonstrating insufficient skills, may need to take additional coursework prior to the start of their Ph.D. program.

Each student will develop a detailed program plan with the consultation of advisor(s) to outline two years of required course works, take the prelims and comprehensive exams, fulfill their teaching requirement, and complete their dissertation. Students generally complete the IS theory-based and methods coursework within the first two years of their program. After

completing all required coursework, students immediately take a comprehensive exam, typically during the Maymester time-period if finishing coursework in the Spring. Besides these general requirements, students should work with faculty on various research assignments that ultimately may be published in top-ranked IS journals.

Following successful completion of the comprehensive exam, students begin to work on their dissertation research during the Summer before the start of their 3rd year. The dissertation is an independent research project conducted by the student under the supervision of a dissertation committee assembled by the student. It is strongly recommended that students do research consistent with the research interests of current faculty. These topics include Behavioral, Organizational, Economics and Social issues related to information systems. The specific sequence of courses can vary depending on the schedule of classes being offered. The following is a sample milestone for the program schedule and completion requirements.

### **Schedule and Milestones**

- **Year 1, Semester 1**
- Coursework
  - ISMG PHD1
  - ISMG 7200
  - Advanced Research Method
- Initiate research project 1 (RP1) with faculty.
  
- **Year 1, Semester 2**
- Coursework
  - ISMG 7211
  - ISMG PHM1
  - Advanced Methods Research
- Complete research project 1 (RP1) with faculty.
- Work on at least one publication for submission to a conference
  
- **Year 1, Summer**
- Prelims examinations.
- Conduct independent research with a faculty advisor; be ready with a rough draft by the end of summer.
- Continue writing and improving the paper for presentation in year-2.
  
- **Year 2, Semester 1**
- Coursework
  - CS Breadth Course

- ISMG 7220
- Initiative research project 2(RP2) with advisor
- **Year 2, Semester 2**
- Coursework
  - ISMG PHD2
  - CSCI Course
- Complete research project 2(RP2) with advisor for submission to a conference
- **Year 2, Summer**
- Comprehensive examinations.
- Develop preliminary ideas for a dissertation topic.
- **Year 3, Semester 1**
- Dissertation hours (6)
- Conduct research for dissertation proposal (at least two essays, three is better), with a focus on literature review, research questions and proposed methods
- **Year 3, Semester 2**
- Dissertation hours (6)
- Dissertation first study should be complete or near to completion
- **Year 3, Summer**
- Dissertation hours (6)
- Dissertation proposal submission to committee for review and finalization
- Finish Dissertation Essay 1 and plan for submission to journal
- **Year 4, Semester 1**
- Dissertation hours (6)
- Defend proposal
- HICSS and ICIS paper submissions.
- Research seminar presentation and Job preparation (Complete enough of the dissertation to be able to interview at the International Conference on Information Systems (ICIS) in December).
- **Year 4, Semester 2**
- Dissertation hours (6)
- Campus interviews, finalize/negotiate job offers.



- Finish and defend dissertation.
- Prepare dissertation journal articles.

### **University-Level Instructional Training**

During the program, each student will obtain training for university-level instruction. This requirement can be fulfilled by working with a faculty member as a teaching assistant, attending university-level teacher training or teaching a university-level class. Students who plan a university career will be encouraged to teach one or more courses and participate in training. When teaching or working as a teaching assistant, a student will be compensated according to standard university salaries.

### **Dissertation Completion**

Following completion of the approval of the dissertation proposal, each student prepares and then submits a dissertation. The dissertation is defended before the doctoral committee in a public meeting. Final approval for the dissertation is given by a vote of the dissertation committee after the public defense of the dissertation.

### **Graduation**

Upon completion of all degree requirements, including the dissertation defense, the student receives the degree of doctor of philosophy. Students applying through the information systems program receive the PhD from the Business School.

# **Education and Human Development PhD**

► Graduate School Rules apply to this program

**Office:** Lawrence Street Center, 701

**Telephone:** 303-315-6300

**Fax:** 303-315-6311

**E-mail:** [education@ucdenver.edu](mailto:education@ucdenver.edu)

**Website:** <https://education.ucdenver.edu/academics/doctoral>

The PhD in Education and Human Development links an intensive research-based course of study with a content area specialization in order to prepare candidates to assume faculty positions in institutions of higher education or research-based organizations. Successful applicants will be paired with a faculty mentor who will engage the student in research, development, service, and other forms of professional activity.

You will complete a plan of study that includes at least 48 semester credits of coursework (including all required core courses) and 27 semester credits of dissertation. The PhD program is designed to provide each student with an induction into the university research and teaching culture. PhD coursework is intensive and substantive, requiring significant writing, analysis, and critiquing of theory and professional literature.

## Overview of Course Work:

The PhD program consists of a minimum of 75 semester credits. Total credits may vary in order to fully prepare for career opportunities. Students complete 48 credits in three core areas outlined below. The final 27 credits are completed through the dissertation.

12 credits - Foundation courses/experiences: Equity and Diversity; Learning; Epistemology; and Teaching in Higher Education

18 credits - Research Methods

18 credits - Concentration Area (see the list options below)

27 credits - Dissertation

Doctoral students complete a series of courses/experiences in a specified concentration area. Concentration areas focus on a defined discipline or content area in preparation for professional roles as researchers and faculty members. Students also complete a research apprenticeship and higher education teaching practicum or equivalent experience.

The following concentration areas are available.

**Leadership for Educational Organizations.** Students and faculty in this concentration area focus on leadership in schools and the crucial assumption that school leadership makes a difference in how schools succeed in improving learning outcomes for all students. However, the scholarship and research on school leadership is such that we are only beginning to understand why leadership is successful, what the interactions are between effective leadership and effective teaching, and how best to impact the collective impact of leadership on organizational and student-learning outcomes at all levels.

**Early Childhood Special Education/Early Childhood Education.** The goal of this concentration area is to introduce students to issues and practices in early childhood special education/early childhood education and to prepare students to provide leadership to improve outcomes for all children including children with disabilities across early childhood settings. Students will obtain the skills and knowledge of evidence-based practices needed to meet state and national leadership needs within institutions of higher education to address issues in ECE/ECSE. Graduates will: conduct rigorous research related to culturally responsive, evidence-based practices; translate research into practice, thus expanding the use of evidence-based practice in the field; and, create, evaluate, and improve pre-service teacher education programs in ECE and ECSE.

**Family Science and Human Development.** The goal of this concentration is to prepare students to critically examine and understand family science within an ecological life span development lens. This program prepares students to work in academic careers as professors, researchers and scholars in Family Science and Human Development. Students are provided a rich curriculum that centers on theoretical and scholarly knowledge in family science, human development and research inquiry. Another objective of this program is to integrate the importance of family diversity (which includes race, ethnicity, culture, class, gender, sexual orientation, age, religion, ability and language) into the curriculum as it relates to social justice

in family science and child, adolescent and adult development. Central to the Family Science and Human Development concentration is the conceptual framework of family and human ecological systems and how that impacts research, practice and policy with diverse families in the United States and at the global level.

**Math Education.** Students and faculty in this concentration area focus on teacher learning and professional development experiences. Specifically, projects investigate the ways that particular interventions used in professional development for mathematics teachers impacts their content knowledge and pedagogical practices in their classrooms. Work in this area is framed by a situative perspective of learning and incorporates mixed methods to answer questions around the ways particular interventions support teacher and student learning. Video data is prominent in both the design of professional development interventions as well as a major data source for analyses. Analytic methods vary based on the research question and grain size.

**Research and Evaluation Methods.** The goal of this concentration area is to prepare students to design and carry out significant applied research on individual and organizational change in the field of education and human development. Through problem-based pedagogy and hands-on learning, students will be prepared to be collaborative applied researchers who work with community, university and school partners. Students will learn advanced quantitative, advanced qualitative and mixed methods research techniques. Course content includes mixed methods, advanced statistics, advanced qualitative data analysis, systems analysis, collaborative team research and practicum experiences. Graduates of the program are prepared to work as faculty members, school district and organizational researchers, data analysts and assessment coordinators.

**Science Education.** The goal of this area is to prepare students to explore, understand, and think critically about the nature of science and science education from a largely research-oriented perspective. Students may elect to focus on environmental science education as an area of specialization within this concentration area through electives and discipline-specific research agendas.

**Critical Studies in Education.** This concentration area houses faculty who approach their research and teaching in education with a transdisciplinary and critical lens, especially with respects to race, gender, class, disability, sexuality, language, and culture. Faculty members ground their approach in social justice in education and promote the ideas of educational equity, transformative education, and educational activism in nontraditional ways. Particularly, how schooling, society, and policies are dialectical sites of oppression and liberation and the role of educators is that of intellectual activists to facilitate that liberation. Because an activist approach is necessary, this concentration areas offers a monthly faculty and student research meeting where students and faculty collaboratively work on research, publications, conference presentations, and theory building. The faculty of Critical Studies in Education approach education in critical ways to ensure the futurity of a more transformational, liberatory, and humanizing educational system and society.

# Engineering and Applied Science PhD

Graduate School Policies and Procedures apply to this program

The multidisciplinary Engineering and Applied Science Doctor of Philosophy degree program is offered by the College of Engineering, Design and Computing and consists of a primary and secondary concentration. Applicants apply and enter the program through one of four departments, called the host department, which is chosen based on the applicant's intended primary concentration of study. The four departments that serve as host departments are:

- Civil Engineering
- Computer Science and Engineering
- Electrical Engineering
- Mechanical Engineering

Each host department offers several concentrations. A list of concentrations can be found on each department's website. Go to [engineering.ucdenver.edu](http://engineering.ucdenver.edu) to learn more.

The required secondary concentration can be chosen from any remaining department within the college, including the Department of Bioengineering. The secondary concentration may also be chosen from another CU Denver school or college. A student chooses his/her secondary concentration with the help of a faculty advisor after entering the program.

## Requirements for Admission

Requirements for admission to the Engineering and Applied Science PhD program can be found at [engineering.ucdenver.edu/graduate-admissions](http://engineering.ucdenver.edu/graduate-admissions).

## Degree Requirements

The minimum degree requirements consist of 30 semester hours of course work in the primary and secondary areas of concentration, as well as 30 semester hours of research/dissertation credit. Each candidate for the degree is expected to take a preliminary examination by the end of the second year. After successful completion of this exam, the student is required to take the comprehensive examination and the doctoral dissertation defense examination. Additional requirements are outlined in the Rules and Regulations document that each student signs after being admitted to the program. Each student must also satisfy the degree requirements of the CU Denver Graduate School.

# Geography, Planning, and Design PhD

► Graduate School Rules apply to this program

**Contact:** Dr. Jeremy Németh, Director  
**Telephone:** 303-315-1000  
**Email:** jeremy.nemeth@ucdenver.edu

## Overview

The Ph.D. in Geography, Planning, and Design at the University of Colorado is a research-oriented degree offered by the College of Architecture and Planning (CAP) at the University of Colorado Denver. Initiated in 1997, the program is dedicated to the education of future intellectual leaders in the fields of the built environment who have a critical understanding of the social, political, and global conditions that influence their profession.

It is the intent of the program to prepare students to excel in research regarding the planning and design of built environments through the incorporation of intellectual, analytical, and integrative aspects of the involved professions. Within this context, students and faculty seek to creatively shape the built environment and understand it in relation to institutional, political, economic, social, and natural environments.

Admission to the program is competitive and based on merit and available funding. Excellent academic performance, references, and a commitment to critical issues in the built environment are prerequisites.

The minimum residency requirement is four semesters, not including summer semesters. In the first two years of residence, students take courses to satisfy the credits relevant to preparation for writing their dissertation and the core requirement of the program, as well as additional electives. After completing these requirements, the student takes a comprehensive exam.

After satisfying program requirements, students move on to preparing a dissertation topic and research proposal which is presented and defended in a public event. With the successful defense of the dissertation topic and research proposal, students are admitted to candidacy. Finally, the completed dissertation is defended in a public examination involving external examiners in addition to the members of the committee. Upon successful completion of the dissertation defense, the program recommends the awarding of the Ph.D. degree.

One of the strengths of the College of Architecture and Planning Ph.D. program is that students can take advantage of resources in all departments and fields in the College and elsewhere in the university. In addition to faculty from within the College of Architecture and Planning, we have a broad and exciting group of affiliated faculty from many departments across the university.

The Ph.D. degree in Geography, Planning, and Design is appropriate for those seeking careers in research and teaching or roles in government or professional consultation, all of which require a research specialization. So far, over 60 graduates of the program have gone on to faculty positions at universities in the United States and elsewhere, post-doctoral work, and into private consulting, non-profit organizations, and the federal government.

# Admission Requirements

## Prerequisites

Applicants admitted to the PhD program normally will have completed the requirements for the Master of Architecture, Master of Planning, Master of Landscape Architecture, or a related master's degree program. Students from allied fields are encouraged to apply. Field specialization and background are open.

## GPA and TOEFL Scores

Consistent with the University requirements, applications are evaluated based on Grade Point Average (GPA) scores, and the Test of English as a Foreign Language (TOEFL) scores (where applicable). All exams must have been taken within a year before applying to the program:

- Academic achievement as evidenced by an undergraduate grade point average of 3.0 (on a 4.0 scale) or better, and a graduate grade point average of 3.5 or better.
- Applicants whose native language is not English must take either the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) exam, or have a graduate degree from a university in the U.S. or another English-speaking country. The minimum TOEFL score required for acceptance by the University of Colorado at Denver is 80 or higher on the TOEFL (sub-scores of 20 in Reading, Listening, and Speaking, and 24 in Writing) or 6.5 on the IELTS (sub-scores of 5.5 in each area). However, the Ph.D. program typically does not accept a student with a score lower than 85 on the TOEFL and 6.8 on the IELTS.

## Application Checklist

The following documents must be submitted before an application will be considered:

- Application Forms - Apply online!
- Application Fee
- Three Letters of Recommendation
- Examples of previous research and written works
- Official transcripts from all previously attended institutions of higher learning
- Statement of Personal and Professional Goals
- Scores of Test of English as a Foreign Language (TOEFL) for non-U.S. residents whose native language is other than English
- Financial Statement (for non-U.S. residents/citizens)

# Program Requirements

## Overview

Successful completion of the PhD program requires fulfilling course requirements, passing the comprehensive examinations, preparing and defending a dissertation proposal, and undertaking research, writing and defending a dissertation. This is a multi-year process that involves a close mentoring relationship with the student's advisor.

A student's program of study must include at least 12 semester hours of Ph.D. Program core classes and 24 semester hours of study within the area(s) of focus established with the Primary Advisor. The student may focus on one main field of interest or a major and minor field.

Students shall complete the minimum of 36 semester hours in their area(s) of focus and Ph.D. Program core requirements prior to advancement to candidacy. Credit transfers are not allowed. Credits earned from previous courses before the student is enrolled in the Ph.D. program cannot be used as credit toward the Ph.D. degree.

Students must maintain a 3.0 GPA in all their coursework. A grade of less than B in any Ph.D. Program requirement shall not be accepted as meeting those requirements. For Program Core courses, the student must retake the course. A Program Core course may be retaken only once. The student shall be terminated from the program if a grade less than B is received more than once in a Ph.D. Program Core Course.

In addition, students must also pass a comprehensive exam as well as write and defend a dissertation proposal and dissertation.

## Residency and Enrollment Requirements

The minimum enrollment requirement at CU Denver for doctoral students is six semesters of full-time scholarly work beyond the attainment of a bachelor's degree.

The doctoral program requires a minimum of two years of residency (not fewer than four semesters enrolled in a minimum of six semester hours each, excluding summer) devoted to coursework and other preparation for advancement to doctoral candidacy status. Ordinarily, research for the dissertation will also be completed while in residence. After that time, special arrangements can be made with the CAP Ph.D. Committee if substantial work needs to be performed elsewhere.

Students must complete the comprehensive examinations and dissertation proposal within four years from the beginning of their first semester in which they are enrolled as a Ph.D. student at the University of Colorado Denver. In addition, the University of Colorado Denver requires that all degree requirements be completed within eight years of matriculation.

## Active Status

To remain actively enrolled, students must register for six semester hours or more each academic semester (excluding summer) until they become a doctoral candidate. Once they become a doctoral candidate, students must register for at least one semester hour per semester. Students who are not so registered are automatically withdrawn from the University of Colorado Denver and must apply for readmission to the program. The readmission decision will depend on the student's academic record and progress toward the degree.

Doctoral students must register for a minimum of one hour of dissertation credit in the term of graduation. If all requirements for graduation, including submission of the final approved dissertation, have been completed prior to the last day of registration, and the student was registered for the preceding term, the student may apply for a waiver of the enrollment requirement.

## **Advising and Committees**

### **Overview**

Each student entering the program shall have a Primary Advisor. Students wishing to change their Primary Advisor should do so during their first year. All appointments of Primary Advisor must be approved by the Ph.D. Program Director. Students wishing to change their Primary Advisor after the first year must petition the Ph.D. Program Director for approval. The Dissertation Advisory Committee is comprised of a Primary Advisor and at least two additional members. Any of these three may serve as the Chair of the Dissertation Advisory Committee.

### **Primary Advisor**

The Primary Advisor guides the student through the completion of the course requirements, the preparation for the comprehensive examinations, the dissertation proposal, and the dissertation. The Primary Advisor must have a doctoral degree and be a tenured/tenure-track member of the College's Ph.D. Program or an invited affiliate faculty with a regular appointment to the Graduate School. The Primary Advisor may serve as the Chair of the Dissertation Committee but may not serve as the Chair of the Comprehensive Exam Committee.

### **Committee Chair**

The Committee Chair's primary responsibility is serving on the student's Advisory Committee and chairing the dissertation defense.

### **Dissertation Advisory Committee**

The Dissertation Advisory Committee provides guidance for the investigated dissertation topic, comprehensive examination, dissertation, and the final dissertation examination.



This Committee includes at least three faculty members: the Primary Advisor and at least two additional committee members. One of the committee members must be a full-time faculty member of the College, and the majority of the committee members must have a Ph.D. degree. All committee members must hold Graduate Faculty appointments. This Committee must be fully formed by the beginning of the student's third semester of study.

Membership of this Committee may change if the student's interests and needs change. Any changes should be developed in consultation with the student's advisor and must be approved by the Ph.D. Program Director. The Dissertation Advisory Committee must meet with the student at least once each year to assess progress.

## **Comprehensive Examination Committee**

This Committee consists of a minimum of three graduate faculty members, including the Primary Advisor. Although it is not a requirement, this Committee should mainly consist of the Dissertation Advisory Committee. At least one member of the Comprehensive Examination Committee must be a full-time faculty member of the College, and the majority of the committee members must have a Ph.D. degree. All committee members must hold Graduate Faculty appointments.

## **Final Dissertation Examination Committee**

The final Dissertation Examination Committee shall be formed according to the Policies and Procedures of the Graduate School. All committee members must hold Graduate Faculty appointments.

## **Special Circumstances**

If the Primary Advisor leaves the faculty of the College before the comprehensive exam and/or dissertation topic is approved, the Ph.D. Program Director will work with the student to identify a new Primary Advisor and Chair for the Committee.

If the Primary Advisor leaves the faculty of the College after the comprehensive exam and/or dissertation topic is approved, and both the Primary Advisor and the student wish to continue in the advising relationship, the original Primary Advisor can continue to be co-advisor with the appointment of a co-advisor from within the Program. The Primary Advisor may be appointed as adjunct faculty in the Graduate School and will continue to hold a regular graduate faculty appointment until the student graduates, in order to recognize his or her continuing role, with approval of the Ph.D. Program Director.

If a member of the Dissertation Committee other than the Primary Advisor is unable to continue in this role, for any reason, the Primary Advisor will work with the student to identify a new member for the Committee. Upon accepting to serve in this role, the new member of the

Committee must sign on the dissertation topic and dissertation proposal documents as they were previously approved.

## Curriculum

The minimum requirement is 36 semester hours of coursework, all of which must be at the Graduate level (5000 and above) and 30 hours of dissertation semester hours. All Ph.D. students are required to take 12 semester hours of core courses.

The curriculum is divided into three stages consisting of core courses, major and minor field courses, and the dissertation. The program requires a minimum of 66 semester hours of graduate work, 36 of which must be earned while in residence.

Each student's curriculum is tailored to his/her individual needs and is determined in close consultation with the dissertation advisor. Within their area of specialization, students will identify a major area of study and an outside field of study. All students are required to enroll in the Ph.D. Colloquium and Research Methods core courses during the first and second years of course work.

### **Core Courses (12 semester hours, minimum with B or better grade)**

- Ph.D. Colloquium 1 (1 semester hour)
- Ph.D. Colloquium 2 (1 semester hour)
- Ph.D. Colloquium 3 (1 semester hour)
- Ph.D. Colloquium 4 (1 semester hour)
- Literature Review survey with the committee chair (2 semester hours total)
- Two Research Methods courses (3 semester hours each)

### **Courses supporting the Area(s) of Interest (24 semester hours, minimum grade of B)**

Students work with their Dissertation Advisory Committee to designate their area(s) of interest. This designation is not intended to reflect the particular focus of their dissertation topic but rather the disciplinary context within which their dissertation topic resides. Students, in consultation with their advising team, may select one central area of study or a major and minor area of study. This designated course of study forms the basis for their comprehensive exam.

### **Dissertation Credits (variable): (30 semester hours, minimum of B or better grade)**

During the course of doctoral study, students may enroll for credits related to their preparation for comprehensive exams, the dissertation proposal and preparation, or advisor approved independent study as dissertation credits.

## Typical Course of Study

## **FIRST YEAR**

Students develop their degree plan, take six semester hours of the required Core Curriculum, complete additional courses in their specialty area, and any prerequisite courses.

## **SECOND YEAR**

Students take the remaining core courses, continue to take electives in their specialty areas, begin literature surveys and reviews, and prepare for their comprehensive exam.

## **THIRD YEAR**

Students complete their specialization papers, prepare a dissertation proposal, complete the literature review, and take the comprehensive exam.

## **FOURTH/FIFTH YEAR**

Fourth and fifth years are spent researching and writing the dissertation.

## **Ph.D. Degree Time Limit: Eight Year Completion Requirement**

The University of Colorado Denver requires that doctoral students, whether enrolled full time or part time, must complete all degree requirements within eight years of matriculation. Students who fail to complete the degree in this eight-year period are subject to termination from the Graduate School upon the recommendation of the program director and concurrence of the Dean. For a student to continue beyond the time limit, the program director must petition the Dean for an extension and include:

1. reasons why the program faculty believes the student should be allowed to continue in the program and
2. an anticipated timeline for completion of the degree.

Approved leaves of absence do not automatically extend the time limits for earning a degree, but they may be used as a reason to request an extension if needed.

For more information on the Ph.D. in Design and Planning, visit the College of Architecture and Planning website.

## **Health and Behavioral Sciences PhD**

► Graduate School Policies and Procedures apply to this program

## Requirements for Admission

A master's or equivalent graduate degree, or substantial research experience, is recommended for admission to the PhD program. Students applying without prerequisites may be admitted, but will be required to complete appropriate courses before being permitted to complete the core curriculum.

In addition to the general admission requirements of the Graduate School, the specific admission requirements for the PhD in health and behavioral sciences are as follows:

1. Knowledge from prior course work or vocational experience in *Epidemiology* (3 semester hours or the equivalent work experience). The applicant should have an understanding of the basic concepts and methods of epidemiology, including measures of risk, mortality, the distribution of disease, the role of bias and confounders, and study design.
2. Demonstrated academic excellence as evidenced by strong undergraduate and graduate GPAs. Admission to the program is highly competitive.

The applicability of a student's prior course work will be decided by the program executive committee after reviewing the student's transcript and additional materials. If the student does not have the requisite educational background or GPA, the student may be admitted on a conditional or provisional basis and additional course work required in accordance with Graduate School Policies and Procedures.

Prospective students should not be dissuaded from applying to the program if they do not meet all of the requirements for admission. In some cases, employment experience may be counted toward meeting a requirement. In other cases, students may be admitted conditionally upon their completion of a list of prerequisite courses that will be established at the time of admission. Students should be sure to address this issue in completing the graduate application by specifying the academic and vocational experience they possess that meets, in part or full, the admission requirements described above.

## MASTER'S LEVEL PREPARATION FOR THE DOCTORAL PROGRAM IN HEALTH AND BEHAVIORAL SCIENCES

The program does not currently offer master's-level training in HBSC.

## TO APPLY FOR ADMISSION

At the Denver campus, all graduate applications are now submitted electronically. To begin the application process, go to the online admissions website. If you have any difficulties, call the administrative assistant at 303-315-7157. The program admits students only for the fall semester, which typically begins in mid- to late August. The deadline for the receipt of all application materials is **January 1** for admission the following August.

Applicants should invest considerable thought and effort in preparing their application. For instance, in the essay, applicants should provide information on: (a) their research interests and plans for graduate study; (b) how they see their research interests fitting into our program; (c) academic or professional research experiences including publications, theses, and research in progress; (d) academic and professional experiences in their proposed or related fields, including non-course education, teaching or other relevant employment, or other scholarly activities.

Applicants should also submit a brief writing sample that showcases their current skills in writing and analytical thinking. It is more important that the writing sample reflect their best work than that the topic match their planned area of study in our PhD program. Examples could include a class paper, a selection from a thesis, a lead or sole authored paper, an op-ed style essay, a policy brief, or other sample.

Applicants should provide a current resume or CV to support their application.

In addition to the required recommendation form, letters of recommendation are required from at least three individuals in a position to judge the applicant's ability to complete the program. Recommenders may be employers, colleagues or professors; however, the applicant should be sure that the letters address the quality of, and aptitude for academic work as well as personal characteristics and qualities.

The program does not require GRE scores, but applicants may submit their scores if they believe it will strengthen their application.

## **Financial Aid**

There are five kinds of financial aid available: graduate student stipends/fellowships; tuition assistance; teaching assistantships; research assistantship positions funded by grants to specific program faculty; and the regular package of financial aid (primarily loans) available through the financial aid office.

Newly admitted, out-of-state, and students demonstrating outstanding scholastic achievement receive priority when assigning departmental sources of funding. Students interested in research assistantships should contact the individual faculty member with whom they wish to work regarding potential assistantship positions.

All other aid should be requested through the CU Denver Financial Aid Office.

## **Program Requirements**

There are three dimensions to the required curriculum:

- a. A core curriculum that focuses on problem-oriented, interdisciplinary approaches to theory and method

- b. Elective course work intended to provide the student with a solid base from which to launch the dissertation research
- c. Dissertation research and writing

The curriculum is subject to change. What appears below is intended to give students a general idea of the extent, shape and content of the curriculum. Students should check with the program office for up-to-date information on specific course requirements and scheduling.

## **The Core Curriculum**

The core curriculum should be completed by students by the end of their second year of full-time study. It consists of the following series of courses which, together, constitute 26 semester hours:

### **I. Health and Behavioral Sciences Colloquium**

Each fall, the HBSC program will organize a series of presentations by scholars working in the health and behavioral sciences. The presentations provide students with the most current science and theory in the field. Required of all first- and second-year students, who must take at least two times.

- HBSC 7001 - Colloquium Series in the Health and Behavioral Sciences

**Total: 2 Hours**

### **II. Theoretical Perspectives in the Health and Behavioral Sciences**

This series is designed to give students a thorough background in how the principles of the social and behavioral sciences have been applied to health issues. Topics include: the interplay between structure and agency in creating and maintaining health; social epidemiology; critical theory and social determinants of health; issues affecting Western biomedicine and public health systems; diffusion of healthy behavioral change among populations; social construction of health and illness; health policy and bioethics; social networks; and stress.

- HBSC 7011 - Theoretical Perspectives
- HBSC 7071 - Social and Behavioral Determinants of Health and Disease

**Total: 6 Hours**

### **III. Human Ecology and Environmental Adaptation**

This course will emphasize the biological/physiological dimensions of human health and disease.

- HBSC 7031 - Human Ecology and Environmental Adaptation

**Total: 3 Hours**

#### **IV. Research Design and Methods in the Health and Behavioral Sciences**

Three HBSC core research design and methods courses, plus one additional advanced methods course of student's choosing. This series covers the philosophy of science and the structure of scientific inquiry, procedures for hypothesis-testing, quantitative and qualitative methodological strategies commonly employed in the field, epidemiology and program evaluation.

- HBSC 7041 - Research Design and Methods in the Health and Behavioral Sciences I
- HBSC 7051 - Qualitative Research Design and Methods
- HBSC 7061 - Quantitative Methods in the Health and Behavioral Sciences
- HBSC 7161 - Quantitative Methods in Health&Behavioral Sciences II

**Total: 12 Hours**

#### **V. Applications of the Health and Behavioral Sciences**

This course offers students the opportunity to focus on individual research interests with guidance from faculty and input from peers.

- HBSC 7111 - Applications of the Health and Behavioral Sciences

**Total: 3 Hours**

**TOTAL CORE: 26 Hours**

#### **Elective Courses**

Elective course work together constitutes 6 semester hours, which can be drawn from the large number of offerings in the health and behavioral sciences at CU Denver. Students will be expected to fulfill the necessary prerequisites for taking these courses, and final authority as to whether a student may enroll in the course will rest with the department in which the course is offered.

**TOTAL ELECTIVES: 6 Hours**

#### **Doctoral Dissertation Research**

The doctoral dissertation research topic is chosen by the student. The student is expected to define a research question in health and behavioral science, identify the research strategy to be used for answering the question, conduct the research required and document the project in the form of a doctoral dissertation. The student will be guided in this process by a doctoral dissertation advisor and the additional members who comprise the student's doctoral dissertation committee (see below). A minimum of 30 semester hours of dissertation work is required. Students must register for a minimum of 5 dissertation credits each semester of their dissertation work. Students may not take more than a year's leave of absence or fail to enroll for semester hours more than three semesters before they are dropped from the program.

## **Advisors**

Upon admission to the program, each student will be assigned a first-year advisor. The student or the faculty will then choose the faculty advisor who will guide the student through the core and elective course work. This faculty advisor may or may not be the student's dissertation advisor. The student selects his or her dissertation advisor and a minimum of three additional committee members who oversee the student's comprehensive examination and dissertation research.

## **Formal Review**

A formal review of each student's progress will be undertaken at the end of each year of study. Students who are deemed not to be making satisfactory progress will be informed in writing as to the nature and final result of the review before the end of June.

## **The Dissertation Prospectus and the Comprehensive Examination**

Before a student advances to candidacy, they must complete a dissertation prospectus and defend it successfully in the context of an oral comprehensive examination. The dissertation prospectus is a complete description of the question or hypothesis that the student wishes to research for the dissertation project, the research design and study techniques and an assessment of the proposed project's contribution to the field. It will include a comprehensive review of the relevant literature. If the student chooses to undertake research in a particular ethnic or cultural community, they must also demonstrate sufficient understanding of that setting including adequate knowledge of the language. This prospectus must be approved by the student's advisor prior to scheduling the comprehensive examination.

The comprehensive examination will be an oral format based in part on, but not restricted to, the material presented in the dissertation prospectus. This exam *must* take place before the student's advancement to candidacy and will typically occur by the end of the third year of study. A committee comprising the advisor and a minimum of three faculty members will supervise the completion of the dissertation prospectus. This committee will conduct the oral



examination and will recommend to the faculty by a majority vote whether or not the student should be advanced to candidacy.

## **The Doctoral Dissertation and Final Exam**

After advancement to candidacy, the student in consultation with his or her advisor will appoint a dissertation committee comprising the chair and a minimum of three faculty members. The dissertation advisor and composition of the committee will be subject to approval by the faculty. The dissertation advisor will be responsible for overseeing the research and writing of the doctoral dissertation. The committee will review drafts of the dissertation and, when the dissertation is completed to its satisfaction, will conduct the final exam, which will be based on the doctoral dissertation and related materials. The final examination will be open to the public.

## **Dissertation Total: 30 Hours minimum**

# **Health Economics PhD**

► Graduate School Policies and Procedures apply to this program

**Program Director:** Brian Duncan, Ph.D., Department of Economics

**Program co-Director:** Richard Lindrooth, Ph.D., Health Systems, Management & Policy

**Graduate Advisor:** Daniel Rees, Ph.D., Department of Economics

The Ph.D. in Health Economics is designed to train scientists to engage in modern economic research related to questions pertinent to the health care sector and to personal and public health. Students take courses both from the Economics Department, which is housed in the College of Liberal Arts and Sciences, and from the Health Systems, Management & Policy (HSMP) Department, which is housed in the Colorado School of Public Health. The ECON coursework grounds students in rigorous economic theory and modern statistical methods, whereas the HSMP coursework connects students to institutional details of the health care sector, administrative data methods, grant writing, and the development of interdisciplinary health care research.

## **Admission Requirements**

- Meet all general admission requirements of the Graduate School (including a 3.0 undergraduate grade-point average).
- Submit three letters of recommendation (at least two letters should come from individuals who are familiar with your scholarly record. The third can be an additional academic reference or professional reference from someone who knows you well and can comment on your potential as a graduate student).

- Submit official transcripts from all colleges attended.
- Have completed 15 credit hours of undergraduate economics, including intermediate microeconomic theory and econometrics (upper division courses).
- Have completed courses in calculus and statistics (preferably a year of calculus. A course in linear algebra and/or differential equations is recommended).
- Submit GRE scores. All applicants, international and domestic, must submit GRE scores regardless of prior degrees, course work, or work experience. The institution code for CU Denver is 4875. GRE scores are used in conjunction with other indicators of academic success at the PhD level. Applicants must show strong evidence of quantitative ability either through high grades in math, statistics, and economics courses, a high quant score on the GRE, or preferably both.
- International students must submit TOEFL, IELTS, or PTE Academic scores. The institution code for CU Denver is 4875. The minimum required score is 203 (computer-based TOEFL), 75 (IBT-based TOEFL), 537 (paper-based TOEFL), 6.5 (IELTS), or 51 (PTE). Minimum subscores also apply. More information about TOEFL, IELTS, or PTE waiver requirements can be found on the International Admission's website. Please contact the International Admissions office if you have questions about this requirement.

### **Application Deadlines: June 1**

Students are encouraged to apply by February 1 for full consideration of financial aid. The final application deadline is June 1.

## **Degree Requirements**

1. Students must complete a minimum of 46 didactic credit hours of coursework of which 37 hours are core requirements, and a minimum of 30 dissertation credit hours. Each student's plan will be worked out in conjunction with the graduate advisor. Students are expected to meet all course prerequisites.
2. Students must complete a minimum of 30 graduate (5000 and above) level credit hours.
3. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail. No course may be taken more than twice and only one attempt will retain the credit.
4. Students must complete all credits for the degree with CU Denver/ CU Anschutz faculty.

## **Core Courses**

- ECON 5073 - Microeconomic Theory
- ECON 5803 - Mathematical Economics
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II
- ECON 7073 - Advanced Microeconomic Theory II
- ECON 7661 - Health Economics I
- ECON 7662 - Health Economics II
- HSMP 6602 - Health Equity (3 credits)
- HSMP 6605 - Health Policy (3 credits)
- HSMP 6609 - Cost-Benefit and Effectiveness in Health (2 credits)
- HSMP 7010 - Foundations in Health Service Research I and II (2 credits)
- HSMP 7601 - Research Design & Proposal Preparation (3 credits)
- HSMP 7609 Health Services Research Methods II (3 credits)

**Total: 37 Credits**

## Electives

Any course numbered 6000 or higher with an ECON or HSMP subject code. Courses numbered 6611 or higher with a BIOS subject code may be taken with the graduate advisor's approval.

**Total: 9 Credits**

## Preliminary Exam, Dissertation Proposal, and Dissertation

Students must successfully pass a preliminary examination covering topics in microeconomic theory, econometrics, and health economics by the start of their fourth semester coursework to ensure that they are qualified for doctoral study.

Ph.D. students must defend their dissertation proposal after completing or registering for all non-dissertation coursework and concurrent with applying for admission to candidacy. Students are advanced to candidacy for the Ph.D. once they have completed all required coursework and examinations, and have successfully presented their dissertation proposal to their dissertation committee.

After students are advanced to candidacy, they must complete a total of 30 hours of dissertation credits to complete the PhD. Each fall and spring semester, students are expected to register for a minimum of 5 semester hours of dissertation research; if unable to register for at least 5 semester hours, students must request a leave of absence from the PhD program until able to complete the minimum dissertation requirement. Students may take up to two semesters' leave of absence before they are unenrolled from the program. Students then would need to reapply to the program.

Each student must write and defend a dissertation containing original contributions and evidence of significant scholarship that the student's primary advisor and dissertation committee deem satisfactory.

**Total: 30+ doctoral dissertation credits**

# Integrative and Systems Biology, PhD

► Graduate School Rules apply to this program.

**Director for PhD Program:** Alan Vajda

**Office:** Science, 4104

**Telephone:** 303-315-7640

**E-mail:** Alan.Vajda@ucdenver.edu

**Website:** <https://clas.ucdenver.edu/integrative-biology/academics/graduate-programs>

## Requirements for Admission

- A BA/BS or MS from an accredited institution awarded within the last 10 years (validation of current content may be required). Minimum undergraduate GPA: 3.0
- TOEFL: required for international applicants from countries in which English is not the official language
- 3 letters of recommendation
- Official transcripts from all attended institutions
- Students are required to contact faculty in advance. Prior to application, applicants must have identified and contacted an available Faculty Advisor to ensure availability of a position and appropriate research interests

### Prerequisite courses required:

- One year of General Biology is preferred. Where needed, supplementary courses or reading programs may be designed to provide background information of sufficient depth for the Program curriculum
- One course in applied or biological statistics (through regression and ANOVA)
- Additional prerequisite requirements may be set by individual faculty

Applications will be considered annually starting December 1 for both domestic US students and international students. Application to the PhD program is through CU Denver Admissions.

## Degree Requirements

The PhD degree requirements comprise six phases. First, students must complete a minimum of 60 credits, including 30 dissertation credits. Up to 30 hours of graduate level courses from other

programs may be transferred and counted toward the degree. Students must also pass the Preliminary Exam, form an Advisory Committee and an Examination Committee, meet the academic residency requirement, pass the comprehensive exam, and write and orally defend a dissertation.

### Research-based PhD degree program **requires**

1. Completing 60 credits including 30 of dissertation (BIOL 8990)
2. Meeting minimum academic residency requirements
3. Passing the Preliminary Exam
4. Forming Advisory and Examination committees
5. Writing and defending research proposal
6. Passing the Comprehensive Exam
7. Writing and defending dissertation (including >1 publishable paper)

## **Required Courses**

- BIOL 6764 - Biological Data Analysis (4 credits taken in the first year)
- BIOL 6705 - Biological Research Workshop (4 credits total, taken two different times in the student's career)
- BIOL 6655 - Seminar (2 credits total, taken two different times in the student's career)
- BIOL 7010 - Integrative and Systems Biology (3 credits taken in the first year)
- BIOL 7050 - Special Topics (a minimum of 3 credits must be completed, but students may take up to 9 credits)
- BIOL 8990 - Doctoral Dissertation (30 credits must be completed after passing the Comprehensive Exam)
- BIOL 6002 - Biology Skills Sets - Pedagogy (2 credits taken in the first year; only required for students supported by a Graduate Teaching Assistantship)

# **Leadership for Educational Equity EdD**

► Graduate School Rules apply to this program

**Office:** Lawrence Street Center, 701

**Telephone:** 303-315-6300

**Fax:** 303-315-6311

**E-mail:** [education@ucdenver.edu](mailto:education@ucdenver.edu)

**Website:** <https://education.ucdenver.edu/academics/doctoral>

## **Program Overview**

Students completing this program earn a Doctorate of Education (EdD) in the area of Leadership for Educational Equity.

The EdD program is a practice-based, doctoral-level program for professional leadership in PK-20 and community-based educational contexts. The EdD prepares leaders to address complex educational challenges, effectively translate research into practice, influence policy, use data in decision-making, and organize individuals and groups to address challenges collaboratively and successfully. The EdD program's equity focus equips educational leaders to recognize, identify, and eliminate those systems that create disparities; and improve policy, structures and practices to ensure opportunities and participation for all individuals.

The EdD program uses a cohort model. Students in the EdD program select a concentration area and work with faculty mentors with expertise in the research and traditions of practice in the concentration area.

Students follow their cohort taking the prescribed coursework and research activities in a three-year plan of study. All students complete courses that are in-person, online, and hybrid with required attendance and activities. A five-year plan of study option is available for select students who obtain permission from the EdD program manager and concentration faculty.

### **Course Work - 54 Semester Credits**

- 18 hours in EdD Core Courses (six 3-credit courses).
- Nine hours research core (three 3-credit courses).
- 12 hours in Concentration Areas (four 3-credit hour courses).
- 15 hours in completion of a culminating Doctoral Research Project. These 15 hours include five 1-credit doctoral seminars and a minimum of ten credit hours during which candidates conduct and complete their doctoral research study.

## **Concentration Areas**

*Executive Leadership* concentration is designed for professionals in leadership positions in educational, community, and non-profit organizations who wish to acquire learning and experiences related to personnel management, finance, accountability systems, evaluation, community relations, policy development, analysis, and research. This concentration supports learning activities for individuals who hold or seek to move into senior leadership positions within school districts, community colleges, education policy organizations, and community-based education organizations. Within this concentration are two options for professional licensure: (1) Administrative Leadership Program with option for Administrative Licensure from the Colorado Department of Education (CDE) or (2) Principal Licensure Program with option for Principal Licensure from CDE.

**Early Childhood Special Education/Early Childhood Education** concentration is designed for educational professionals interested in issues and practices in early childhood special education and early childhood education to improve outcomes for children with

disabilities across early childhood settings. The concentration supports administrators in districts, agencies, and programs to effectively improve outcomes of all children, including children with disabilities.

**Latin@ Schools and Communities** concentration focuses on leadership, organizational change and measurement, research and evidence-informed decision-making, and creating equity and excellence in schools, organizations, and communities. Students study restructuring for linguistic diversity, language education policy and politics, and research on issues affecting Latino/a students and their communities. Together with their faculty mentors, students review current research and apply their leadership skills to create real world solutions for change.

**Mathematics Education** concentration provides learning opportunities for education professionals focused on teacher learning and professional development experiences. Faculty and students investigate how interventions used in professional development for mathematics teachers impacts their content knowledge and pedagogical practices in their classrooms. The coursework is framed by a situated perspective of learning and incorporates mixed methods to address research questions about interventions that support teacher and student learning.

**Professional Learning and Technology (PLT)** concentration supports education professionals in PK-12, higher education, and organizational settings who design and implement professional development and learning activities. Applying principles of adult learning, instructional design, and change leadership, the faculty and students in PLT use a variety of methods to support professional growth and accountability (e.g., mentoring, coaching, site-based communities, e-learning resources, and workshops). The PLT concentration courses prepare students in leadership roles in professional learning programs at all levels to apply research and best practices.

**Science Education** concentration prepares educators to explore, understand, and think critically about the nature of science and science education from a research-oriented perspective. Students may elect to focus on environmental science education as an area of specialization within this concentration through electives and discipline-specific research agendas.

**Urban and Diverse Communities** concentration is designed for practitioners in PK-12, higher education, and community-based settings. Students develop a complex view of urban and diverse educational systems, opportunities, and challenges that are influenced by policies and practices in housing, healthcare, employment, urban development, and similar fields. Students develop the skills and dispositions to work alongside communities, while developing an understanding of the historical and cultural realities facing those communities.

## **EdD Program with Higher Education Concentration**

Students completing this program earn a Doctorate of Education (EdD) in the area of Leadership for Educational Equity in the Higher Education Concentration Area. Within this concentration, all students complete 8-week online courses with required activities and off-

campus, in-person one-week intensives with required attendance/activities. This is a three year program (there is not a five year option for the Higher Education Concentration).

Students in the EdD program in the Higher Education concentration work with faculty mentors with expertise in the research and traditions of practice in a variety of post-secondary and higher education settings. The Higher Education concentration also provides a unique executive coaching support service (for a maximum of 12 months post-graduation) that students may choose to receive after completion of the EdD program.

Topics of study in the Higher Education concentration include leadership skills to improve access, equity, and success for college and university students; power and privilege; law and ethics; organizational cultures; finance and strategic resource allocations; and predictive analytics.

### **Course Work - 54 Semester Credits**

The EdD in Higher Education concentration 54 credits include the following course work and research activities:

- Nine credit hours in EdD in Higher Education Core Courses (three 3-credit courses).
- Nine credit hours Research Methods Courses (three 3-credit courses).
- Twenty-one credit hours in Higher Education Concentration Area (seven 3-credit courses).
- Fifteen credit hours in completion of a culminating Doctoral Research Project. These 15 hours include five 1-credit doctoral seminars and a minimum of ten credit hours during which candidates conduct and complete their doctoral research study.

# **Psychology, Clinical Health Psychology PhD**

► Graduate School Policies and Procedures apply to this program

## **Objectives of the Program**

Clinical health psychology focuses on the interaction between psychological, physiological, and environmental factors as they influence health and well-being. This emphasis includes focus on: 1) the development of effective disease prevention behavioral interventions for individuals and populations at high risk for medical problems; and 2) the development of strategies to help individuals who are already ill to manage their disease and to increase their ability to collaborate with medical professionals and improve their coping skills. A clinical health psychologist combines expertise in research on health psychology with training in clinical psychology. Students in this program are trained to work within the community to use clinical



psychological skills and techniques to diagnose and treat mental health conditions, promote health and prevent illness, apply behavioral interventions in the treatment of illness, and improve the health care system. In addition to course work, students acquire expertise in research by completing both a master's thesis and doctoral dissertation. They demonstrate competence in clinical assessment and intervention through several applied practicum experiences, successful passage of the Comprehensive Clinical Competency Examination and successfully completing a pre-doctoral psychology internship. Students can complete the program in five years and have up to eight years to complete the program according to Graduate School Policies and Procedures.

## **Admissions**

The application deadline for receipt of all student information is November 15 for the following fall. You are responsible for making sure all materials are in on time. International students should be sure to submit all materials at least two weeks before this deadline (by November 1) so that they arrive at our department on time.

### **Admission Requirements:**

- BA or BS from an accredited college or university, with a minimum GPA of 3.5 based on all college course work.
- Undergraduate courses in: introductory psychology, psychological statistics, research methods and abnormal psychology. Additional courses in psychology are highly desirable; our admissions committee will also look favorably upon courses in the biological and physical sciences.
- Two official transcripts from each college and university attended.
- Graduate Record Exam (GRE): The GRE General Test (verbal, quantitative, analytical writing) is required. Most students in the program had a combined verbal and quantitative score of at least 1100 on the old GRE scoring system. The GRE should be taken at least six weeks before the November 15 deadline so that the scores arrive on time.
- Three letters of recommendation, at least two of which must be academic references. Applicants provide contact information for their references in the online application. Those individuals are automatically contacted electronically and asked to upload their recommendations directly to your application file.
- The online Graduate Application, including your resume/vita and personal statement.
- Application fee of \$50 (\$75 for international students).

## **Financial Information**

The University of Colorado Denver administers various forms of financial aid for graduate students: fellowships, scholarships and a number of awards from outside agencies. See the Office of Financial Aid for further information. Additionally, the psychology department offers teaching assistantships each year in such courses as introductory psychology, statistics, research methods and human development. Although we do not guarantee TA positions, we have been able to offer positions to our interested students.

Contingent upon the availability of grant money, faculty may also offer part-time research assistantships to qualified students. The typical RA position involves data collection and analysis, library research, etc. Some computer and statistical skills are usually required. RA positions are less available than TA positions, and they may arise on very short notice.

In-state tuition waivers and additional stipend monies may be available for doctoral students. We do guarantee to pay a full stipend, usually in the form of an assistantship, plus tuition for the first year. We will make every effort to do so for four years.

*Note:* Neither teaching nor research assistantships confer in-state tuition status.

## **Degree Requirements**

### **Course Work:**

The program requires approximately eight semesters of full-time course work and clinical practica, followed by a year-long internship. Students must maintain a 3.0 grade point average, and no grade below a *B* will count toward the requirements. Students must successfully complete their doctoral dissertation proposal prior to applying for their internship in the 5th year and are strongly encouraged to defend their dissertation prior to beginning their internship. Students can complete the program in five years and have up to eight years to complete the program, according to Graduate School Policies and Procedures.

### **Master's Thesis:**

The program has a provision for achieving a master's degree *en route* to obtaining the PhD. In addition to taking PSYC 8200, Teaching Skills Seminar, a master's degree is required for students to independently teach a course. During their time in the program, students' funding will likely require them to independently teach a course. Students must complete a master's thesis, an empirical research project that makes a significant contribution to the field. Although the thesis must address the student's own original question, the use of archival data and pilot studies is encouraged for this project.

### **Clinical Practica:**

A minimum of 500 face-to-face intervention and assessment hours and 1200 total practicum hours [face-to-face intervention and assessment hours, plus supervision, plus support hours as defined by the Association of Psychology Postdoctoral and Internship Centers (APPIC)] are expected in preparation for application to pre-doctoral internships. Approximately 50% of required practica are typically conducted in medical settings. Sites for practica training, include the department's own Psychology Clinic and external facilities such as outpatient diabetes clinics, cancer clinics, OB/GYN, HIV/AIDS, end-stage renal disease, pain, and cardiovascular

clinics, and in-patient psychiatric facilities. Students are able to select practica based on their personal and professional interests. All field placements are approved in advance by the Coordinator of Clinical Training.

### **Demonstration of Clinical Competency:**

During the first semester of their third year in the program students must demonstrate their clinical competency by completing the Comprehensive Clinical Competency Examination (CCCE). The CCCE is designed to facilitate student demonstration of clinical competence at the developmental level of readiness for application to clinical internship. This evaluation is designed to assess the developmentally appropriate broad and general clinical competencies in clinical psychology, and does not necessarily evaluate clinical health psychology competencies *per se*. The CCCE comprises three sequential components conducted in phases:

1. Applied clinical diagnosis and assessment planning for a standardized patient.
2. Case conceptualization and treatment planning for a standardized patient. .
3. Intervention therapy session with a standardized patient and oral defense with a faculty committee.

### **Dissertation:**

Students must complete a dissertation that involves original empirical work and is distinct from other research projects and publications. The dissertation proposal must be completed and defended prior to making application for the pre-doctoral internship. Students must have a dissertation committee composed of four members of the graduate faculty. When the dissertation is completed to the satisfaction of the primary advisor, the student must orally defend the dissertation to the committee.

### **Internship:**

Students must complete a 12-month, full-time pre-doctoral clinical internship, preferably at an APA-accredited site. This internship is required of all clinical psychologists and is the capstone of clinical training in the doctoral program.

## **Courses**

- PSYC 6950 - Master's Thesis
- PSYC 7144 - Advanced Cognition and Emotion
- PSYC 7205 - Advanced Developmental Psychology
- PSYC 7220 - Advanced Biological Bases of Behavior
- PSYC 7262 - Health Psychology I
- PSYC 7350 - Psychotherapy I
- PSYC 7360 - Psychotherapy II
- PSYC 7410 - Assessment I: Personality
- PSYC 7420 - Assessment I: Intellectual and Cognitive Assessment
- PSYC 7485 - Diversity in Clinical Psychology
- PSYC 7490 - Topics in Health Psychology Summer Lecture Series

- PSYC 7500 - Advanced Psychopathology
- PSYC 7511 - Historical and Philosophical Foundations of Psychology
- PSYC 7700 - Clinical Research Methods
- PSYC 7710 - Multivariate Statistics
- PSYC 7713 - Advanced Statistics
- PSYC 7730 - Ethics and Professional Issues in Psychology
- PSYC 7910 - Clinical Practicum  
Class Notes: Students should enroll in 1 credit hour during year one (spring and summer semesters only), 1 credit hour during year two (fall, spring, and summer semesters), and 3 credit hours during year three (fall, spring, and summer semesters). A total of 14 credit hours of PSYC 7910 are required.
- PSYC 7911 - Clinical Practicum II  
Class Notes: Students should enroll in 2 credit hours during year two (fall, spring, and summer semesters). A total of 6 credit hours of PSYC 7911 are required.
- PSYC 8100 - Clinical Behavioral Medicine
- PSYC 8200 - Teaching Skills Workshop
- PSYC 8262 - Health Psychology II
- PSYC 8501 - Primary Care Psychology
- PSYC 8502 - Cardiovascular Health Psychology
- PSYC 8503 - Group Interventions in Health Psychology
- PSYC 8550 - Advanced Social Psychology
- PSYC 8910 - Advanced Clinical Practicum  
Class Notes: Students should enroll in 3 credit hours during year four (fall and spring semesters only). A total of 6 credit hours of PSYC 8910 are required.
- PSYC 8938 - Pre-Doctoral Internship
- PSYC 8990 - Doctoral Dissertation

## Public Affairs, PhD

### Introduction

► Graduate School Rules apply to this program

**Program Director:** Chris Weible, PhD

The PhD in Public Affairs addresses the demand for scholarship in public administration, public policy, public management and criminal justice/criminology. The program develops the conceptual, research, and analytic skills and knowledge of its students so that they will be able to advance the study and practice of public affairs in their subsequent careers. The PhD prepares its graduates for positions in academia and consulting firms, public management and administration, public policy analysis, politics and advocacy, and nonprofits.

The program is primarily designed to serve (1) people who desire to further the field of public policy and public and nonprofit management through teaching and research; (2) scholar-practitioners working in government, private-sector organizations concerned with government and nonprofit organizations; and (3) policy analysts in government, private-sector organizations concerned with government and nonprofit organizations.

The PhD program requires an intense commitment. Most core courses are offered during the late afternoon or early evenings. Students may complete the degree full- time or part- time. On average, students take 4 to 6 years to complete all of the requirements for the PhD. Applicants are encouraged to contact the program director at [chris.weible@ucdenver.edu](mailto:chris.weible@ucdenver.edu) with any questions about the program.

## Program Requirements

- Students must complete a total of 30 credit hours of coursework and 30 credit hours of dissertation work.
- Students may transfer 3 elective credits from a prior graduate degree.

Students must complete the following courses during their first year of study:

- PUAD 8010 - Historical and Comparative Foundations of Public Administration
- PUAD 8020 - Seminar in Public Management
- PUAD 8030 - Seminar in Public Policy
- PUAD 8040 - Seminar In Economic and Institutional Foundations of Public Affairs
- PUAD 8050 - Quantitative Methods I (3 Credits)
- PUAD 8060 - Seminar On The Conduct Of Empirical Inquiry
- PUAD 8070 - Quantitative Methods II (3 Credits)
- An approved qualitative methods course (3 credits)
- Approved graduate-level electives (6 credits)

Upon completion of the coursework and the preliminary exam, students complete 30 hours of dissertation credit.

- PUAD 8990 - Doctoral Dissertation

Comprehensive Exam, Dissertation Proposal, and Dissertation: PhD students must take and pass the comprehensive exam immediately following the completion of their core courses and soon after defend a dissertation proposal. Students then advance to candidacy for the PhD. Upon completing their research, students must defend their dissertation.

## School Psychology PsyD

## **Requirements for the Doctor of Psychology Degree in School Psychology and Licensure**

Students will complete course work in affective, biological, cognitive, and developmental aspects of behavior; legal and professional issues; psychological assessment; crisis intervention; counseling and other direct interventions; and consultation. Specific course requirements include two prerequisite courses, 75 credit hours of coursework, 7 credit hours of practica (minimum of 500 hours in the field), 6 credit hours of clinical externship (minimum of 500 clock hours in the field), 8 credit hours of internship (minimum of 1500 clock hours in the field), and 4 capstone project credit hours. Successful completion of the School Psychology Praxis exam during the course of study and passing of comprehensive examinations are also required. Prerequisites include an undergraduate or graduate course in both of the following: measurement concepts and child development. Students may be admitted to the program without first completing these prerequisites; however, these courses must be completed during the first year of study.

Students will complete the following core course work:

- RSEM 5100 - Basic Statistics
- SPSY 5010 - Introduction to Counseling in School Psychology
- LDFS 6320 - Mind, Brain, and Education
- SPSY 7500 - Biological and Neuropsychological Bases of Behavior
- PSYC 7511 - Historical and Philosophical Foundations of Psychology
- PSYC 8550 - Advanced Social Psychology
- RSEM 7080 - Methods of Qualitative Inquiry
- RSEM 7050 - Methods of Survey Research
- RSEM 7110 - Intermediate Statistics
- RSEM 7210 - Program Evaluation
- SPSY 5600 - Behavior Analysis and Intervention
- SPSY 5900 - School-Based Multicultural Interventions
- SPSY 6100 - School Psychology: Professional and Legal Foundations
- SPSY 6150 - Psychoeducational Assessment I
- SPSY 6160 - Psychoeducational Assessment II
- SPSY 6170 - Applied Developmental Science and Assessment
- SPSY 6350 - School-Based Interventions: Children, Youth and Families
- SPSY 6400 - School-Based Interventions: Groups, Classrooms and Systems
- SPSY 6410 - Psychoeducational Assessment of Culturally and Linguistically Diverse Students
- SPSY 6420 - Crisis Prevention, Planning and Intervention
- SPSY 6450 - School-Based Consultation for Mental Health Professionals
- SPSY 6500 - Affective Bases of Behavior and Psychopathology
- SPSY 6550 - Academic Interventions in School Psychology

- SPSY 6700 - Advanced Seminar in School Psychology
- SPSY 7980 - Clinical Supervision & Admin of Psych Services

### **Supervised Experiences**

- SPSY 6911 - School Psychology Practicum
- SPSY 6917 - Advanced Practicum in Psychological Assessment
- SPSY 6918 - Clinical Externship
- SPSY 6930 - School Psychology Internship

### **Total: 100 Hours**

The doctor of psychology in school psychology degree also requires satisfactory completion of two comprehensive case studies a passing score ( $\geq 147$ ) on the ETS PRAXIS specialty exam in school psychology, a passing score on a written comprehensive examination, and completion of a Capstone/applied research project.

### **Professional Expectations**

All students in the SPSY program are expected to show a strong commitment to the program and to maintain a high academic, professional, ethical standards and sensitivity to diversity. Inappropriate or unprofessional conduct is cause for discipline or dismissal from the program.

### **Licensure**

# **Administrator License - Executive Leadership Program**

Designed for the professional educator who, already holding a master's degree and preferably 5 years leadership experience in education, wishes to apply for an initial administrator license through the Colorado Department of Education and prepare for a career as a superintendent or other district level leader. In addition to coursework, the Colorado Department of Education also requires an exam. Information about Colorado Department of Education exam requirements can be found here:

<https://www.cde.state.co.us/cdeprof/endorsementrequirements>

The 12-semester-hour administrator licensure program combines weekend meetings with online work and hands-on clinical practice-usually completed in participants' home districts.

EDUC 7500 - Strategic Human Capital Development

EDUC 7510 - Strategic Organizational Management

EDUC 7520 - Strategic System Improvement

EDUC 7530 - Strategic Leadership Development

# Early Childhood Special Education Specialist Licensure

## Early Childhood Special Education Program

The early childhood special education (ECSE) program leads to a Colorado teacher license in ECSE specialist. If you hold a current CO teaching license, information on adding an endorsement is available [here](#). The program prepares leaders who will enrich the life experience of young children (ages birth to 8 years) with special needs and their families through a variety of professional roles.

The ECE program focuses on building and supporting learning and development of all children across inclusive settings in the natural environments where they live, grow and learn. Our program emphasizes family-centered practices, culturally sustaining teaching and is inspired by the potential of all children and families. The ECSE program is interdisciplinary in focus, drawing on university resources and the clinical expertise of various community professionals. There is a strong emphasis on fieldwork and practicum experiences in both regular and special education concentrations. Field experiences are a part of each course and provide an opportunity for each student to gain knowledge, abilities and dispositions while interacting with children, families, program staff and community agencies. Practicum experiences are designed to allow students to apply knowledge and practice skills in a closely supervised environment.

## Curriculum and Program Requirements

### Semester Hour Requirements

ECSE specialist license: 36 semester hours

Master's degree plus ECSE specialist license: 42 semester hours

The early childhood special education program provides specialized training in:

- language and literacy development,
- child growth and development,
- teaching and learning approaches with young children,
- learning, development and education grounded in culture, context and identity of young children,
- research methods for education,
- early childhood curriculum and program development for culturally and linguistically diverse inclusive classrooms,
- collaborative program development and supports for children with families and communities,



- leadership of programs and early childhood professional for practice, advocacy, and social change,
- screening and assessment of young children,
- individualized and systematic supports for children diagnosed with disabilities,
- social emotional competence and classroom supports for challenging behaviors,
- working as a participatory member of a transdisciplinary team,
- high and low incidence disabilities,
- education supports for children diagnosed with disabilities or chronic illness.

For more information on coursework and plans of study, please contact an advisor in the School of Education and Human Development.

## **Fieldwork and Practicum Requirements**

For the ECSE specialist initial license, a total of 650 hours of fieldwork/practica is required. Approximately 200 hours of fieldwork are associated with course assignments; 450 hours of intense, culminating practica occur toward the end of the second year of study.

### **Program Requirements and Courses**

To complete the Early Childhood Education program and earn a master's degree and/or license, students must complete the appropriate course work as outlined. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

### **Course Scheduling**

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, three-to eight-week sessions are offered, and courses may be in the morning, afternoon or evening.

### **Planning**

For practicing full-time teachers, we recommend taking two courses each fall and spring semester, and up to two courses each summer. If you prefer a less intensive course load, we recommend one course each fall and spring semester. Please review with your faculty advisor your preferred plan.

### **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

## **Principal Licensure**

LEO offers coursework that leads to eligibility to apply for the initial license for K-12 principal through the Colorado Department of Education. In addition to coursework, the Colorado Department of Education also requires an exam. Information about Colorado Department of Education exam requirements can be found here <https://www.cde.state.co.us/cdeprof/endorsementrequirements>.

Admission to the LEO principal licensure program is competitive. All principal licensure applicants must hold at least a bachelor's degree and a teaching or special services license; we also recommend principal licensure applicants have a minimum of three years of post-licensure teaching or special services experience. LEO's principal licensure program is project-based, requiring students to present evidence of meeting both state and national standards through performance based assessments. A 400-hour clinical-practice experience is integrated throughout the four-semester program.

Students submit performance-based assessments (PBAs) during the principal licensure program to an online assessment system. For successful principal licensure completion, PBAs not approved by the end of the fourth semester must be completed within the two subsequent semesters (not including summer.)

**Note:** Those already holding a master's degree and 5 years of leadership in education should also see the Administrator License - Executive Leadership Program for pursuing K-12 administrator (superintendent or district-level leadership) licensure.

### **Principal Licensure Cohort Options**

Typically, cohorts are comprised of approximately 25 principal candidates who move through the four-semester principal licensure program together. We welcome applicants from all districts into our principal licensure cohorts. However, we also partner with metro-area districts to prepare leaders specifically for their schools.

### **Principal Licensure Course Requirements:**

EDUC 5751 - Principal/Administrator Licensing I. Semester Hours: 3 to 9

EDUC 5752 - Principal Administrator Licensing II. Semester Hours: 3 to 9

EDUC 5753 - Principal/Administrator Licensing III. Semester Hours: 3 to 9

EDUC 5754 - Principal or Administrator Licensing IV. Semester Hours: 3 to 9

Total: 32 semester hours for Principal Licensure.

## **Endorsement Programs**

# **Colorado Endorsement for Culturally and Linguistically Diverse Education**

# Culturally and Linguistically Diverse Bilingual Specialist Endorsement

The Bilingual Specialist Endorsement must be taken after or concurrent to the 24 credit hour CLDE K-12 Endorsement. Applicants to this endorsement should be bilingual and biliterate in Spanish and English; Bilingual Specialist Endorsement courses will be taught in Spanish.

Recommendations for endorsements are made by the CLDE program, but endorsement is granted by the State of Colorado. Individual state requirements vary and may include teaching experience and examinations in addition to a valid teaching credential. Students should consult with the Colorado Department of Education (<http://www.cde.state.co.us>) or another state in which they wish to be endorsed for the most updated endorsement requirements.

## **Required Course** 3 credit hours

- CLDE 5824 - Theories and Methods of Bilingual Education

## **Select one:** 3 credit hours

- SPAN 5060 - Dialects of the Spanish-Speaking World
- SPAN 5020 - Spanish Sociolinguistics
- SPAN 5080 - Spanish in the United States
- SPAN 5076 - Spanish in Colorado

## **Select one:** 3 credit hours

- SPAN 5099 - Special Topics in Linguistics

## **Culminating Experience** 1 credit hour

- CLDE 5850 - Culminating Experience: Bilingual Specialist

## **Total Credit Hours 10**

## **Culminating Experience: Final Reflection**

### **Program Requirements and Courses**

To complete the Bilingual endorsement students must complete the appropriate course work as outlined in the tables. All courses require a grade of B- or better to count to the MA or endorsement and a 3.0 minimum GPA is required for graduation. If necessary, courses may be retaken for a better grade.

### **Course Scheduling**

Because classes are scheduled through the Modern Languages Department (Spanish), students should work with their Faculty Advisor about course selection and scheduling.

### **Planning**

For practicing full-time teachers, we recommend taking one course each fall and spring semester and up to two courses each summer. Some courses are offered only once per year.

### **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

# **Culturally and Linguistically Diverse Education Endorsement: K-12**

Recommendations for endorsements are made by the CLDE program, but endorsement is granted by the State of Colorado. Individual state requirements vary and may include teaching experience and examinations in addition to a valid teaching credential. Students should consult with the Colorado Department of Education (<http://www.cde.state.co.us>) or another state in which they wish to be endorsed for the most updated endorsement requirements.

### **This course plan does NOT lead to MA degree.**

- CLDE 5010 - Foundations of Language & Culture in Education
- CLDE 5160 - History & Law of Bilingual & Immigrant Education
- CLDE 5070 - Linguistic Analysis of English
- CLDE 5030 - Language Development of Multilingual Learners: Advanced
- CLDE 5820 - Teaching Multilingual Learners, Advanced
- CLDE 5050 - Assessment & Advocacy for Multilingual Learners
- CLDE 5825 - Methods of Content Teaching for Bilingual Learners
- CLDE 6912 - Teacher Inquiry in Multilingual Classrooms

Culminating Experience: Final Reflection

### **Total Credit Hours 24**

### **Culminating Experience: Final Reflection**

The culminating experience project is required for the CLDE endorsement and permits you to document your development over the course of your program. Culminating Experience Projects are reviewed by CLDE faculty members. The process is reviewed in every class as each of the PBAs is completed in the classes, helping students to update their culminating experience projects throughout the program. For more culminating experience project guidelines, visit the website at <https://education.ucdenver.edu/academic-services/student-resources/graduate/culturally-linguistically-diverse-education>

### **Program Requirements and Courses**

To complete the CLDE program and earn an endorsement students must complete the appropriate course work as outlined in the tables. All courses require a grade of B- or better to count to the MA or endorsement and a 3.0 minimum GPA is required for graduation. If necessary, courses may be retaken for a better grade.

### **Course Scheduling**

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, eight-week sessions are offered, and courses may be in the morning, afternoon or evening, hybrid, or completely online.

### **Planning**

For practicing full-time teachers, we recommend taking one course each fall and spring semester and up to two courses each summer. Some courses are offered only once per year.

### **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

# **Early Childhood Special Education Specialist Endorsement**

## **Early Childhood Special Education Program**

The early childhood special education (ECSE) program leads to an added endorsement in ECSE specialist. If you do not hold a current teaching license, information about ECSE licensure is available here. The program prepares leaders who will enrich the life experience of young children (ages birth to 8 years) with delays and disabilities and their families through a variety of professional roles.

The ECE program focuses on building and supporting learning and development of all children across inclusive settings in the natural environments where they live, grow and learn. Our program emphasizes family-centered practices, culturally sustaining teaching and is inspired by the potential of all children and families. The ECSE program is interdisciplinary in focus, drawing on university resources and the clinical expertise of various community professionals and partners. There is a strong emphasis on fieldwork and practicum experiences. Field experiences are a part of each course and provide an opportunity for each student to gain knowledge, abilities and dispositions while interacting with children, families, program staff and community agencies. Practicum experiences are designed for students to apply knowledge and practice skills in a closely supervised environment.

# Curriculum and Program Requirements

## Semester Hour Requirements

Master's degree plus ECSE specialist added endorsement: 36 semester hours

ECSE specialist added endorsement: 24 semester hours

The early childhood special education program provides specialized preparation in:

- language and literacy development,
- child growth and development,
- teaching and learning approaches with young children,
- learning, development and education grounded in culture, context and identity of young children,
- research methods for education,
- early childhood curriculum and program development for culturally and linguistically diverse inclusive classrooms,
- collaborative program development and supports for children with families and communities,
- leadership of programs and early childhood professional for practice, advocacy, and social change,
- screening and assessment of young children,
- individualized and systematic supports for children diagnosed with disabilities,
- social emotional competence and classroom supports for challenging behaviors,
- working as a participatory member of a transdisciplinary team,
- high and low incidence disabilities,
- education supports for children diagnosed with disabilities or chronic illness.

For more information on coursework and plans of study, please contact an academic advisor in the School of Education and Human Development.

## Fieldwork and Practicum Requirements

Students seeking an added endorsement in ECSE specialist complete 450 hours of practicum experiences.

### Program Requirements and Courses

To complete the Early Childhood Education program and earn a master's degree and/or endorsement, students must complete the appropriate course work as outlined. All courses require a grade of B- or better to count to the MA or endorsement and a 3.0 minimum GPA is required for graduation.

## **Course Scheduling**

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, three-to eight-week sessions are offered, and courses may be in the morning, afternoon or evening.

## **Planning**

For practicing full-time teachers, we recommend taking two courses each fall and spring semester, and up to two courses each summer. If you prefer a less intensive course load, we recommend one course each fall and spring semester. Please review with your faculty advisor your preferred plan.

## **Active Status**

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

# **Learning Design and Technology: Instructional Technology Specialist Endorsement**

Students already holding a current Colorado teacher license are able to pursue an added endorsement in Instructional Technology (IT). Added endorsements allow current teachers to add an additional area of specialization to their current teacher license in order to become qualified to teach in multiple areas. The IT added endorsement might be pursued alone or in combination with the Learning Design and Technology: Digital Media for Teaching and Learning (K-12) MA.

It is students' responsibility to ensure they are meeting the requirements for the endorsement. Students should refer to the Colorado Department of Education (CDE) website for the most current information. Approved Program Verification for added endorsements is completed by the School of Education & Human Development, but endorsements are granted by the Colorado Department of Education. Individual state requirements vary and may include teaching examinations in addition to a valid teaching license. Students should consult with the Colorado Department of Education and/or the state they will be living in for the most updated endorsement requirements.

The added endorsement in Instructional Technology-K-12 Specialist Level is for seasoned teachers with 3 or more years of licensed classroom experience who want to bring technology into their own classrooms, schools, and districts; move into teaching technology; or support

other teachers during professional development and in-service trainings. Teachers with 3 or more years of licensed experience are able to earn this added endorsement by completing the 24 semester hour IT endorsement program (or 30 semester hours for those completing the IT endorsement along with the LDT MA with concentration in K-12 Digital Media for Teaching & Learning).

**24 semester hours total for IT Specialist endorsement:**

- INTE 5340 - Learning with Digital Stories
- INTE 5250 - Teaching Strategies for Online and Blended Learning
- INTE 5665 - Learning with Social Media and Networking
- INTE 6750 - Trends and Issues in Learning Design and Technology
- INTE 5320 - Games and Learning
- INTE 6999 - Leadership for Technology Innovation
- INTE 6930 - Internship: Learning Technologies

**Plus select one course from the following:**

- INTE 5200 - Crafting eLearning Experience
- INTE 5680 - Producing Media for Learning
- INTE 5711 - Creative Designs for Instructional Materials

## Middle School Math Endorsement

CU Denver's online Middle School Math endorsement is designed for currently licensed teachers who are seeking career advancement and a deeper understanding of how to engage middle school students in math. Mathematical learning opportunities matter and not all students receive the same kinds of opportunities. This endorsement will give you the unique qualifications you need to support and challenge students with diverse abilities and backgrounds.

**Required Courses:**

- MTED 5621 - A World of (Different) Numbers: Quantity and Operation
- MTED 5622 - Expanding Conceptions of Algebra
- MTED 5623 - Geometrical Ways Of Reasoning
- MTED 5301 - Assessment and Equity in Mathematics Instruction
- RSEM 5100 - Basic Statistics
- MTED 5300 - Curriculum and Methods for Teaching Mathematics
- MTED 5070 - (Re)Humanizing the Teaching and Learning of Mathematics

**Select one:**

- MTED 5030 - Theories Of Mathematics Learning
- MTED 5040 - Mathematics Teaching - Theory and Practice



- MTED 5050 - Critique Of Mathematics Education Research
- MTED 5060 - Developmental Pathways In Students' Mathematical Thinking

Students may take one of these courses when they are offered in hybrid and/or online format.

**Total Credit Hours 24**

## Reading Teacher K-12 Endorsement

Recommendations for endorsements are made by the C&I Program, but endorsement is granted by the State of Colorado. Individual state requirements vary and may include teaching experience and examinations in addition to a valid teaching credential. Students should consult with the Colorado Department of Education (<http://www.cde.state.co>) or another state in which they wish to be licensed for the most updated endorsement requirements. Please note that the Colorado Department of Education also requires 2 years of post-licensing teaching experience for the application for the reading teacher endorsement after completion.

### Required Courses

- LCRT 5810 - Oral & Written Language & Literacy
- LCRT 5020 - Reading Development, Instruction and Assessment
- LCRT 5055 - Literacy Assessment & Informed Instruction
- LCRT 5710 - Primary Literacy for Diverse Learners, Pre K-Grade 3 **or** LCRT 5730 - Language and Literacy Across the Curriculum
- LCRT 5720 - Writing Development, Instruction and Assessment
- LCRT 5795 - Current Children's Literature **or** LCRT 5201 - Adolescent Literature (LCRT 5780 , LCRT 5790 offered occasionally)
- LCRT 6910 - Seminar & Practicum in Literacy and Language
- LCRT 6915 - Seminar and Practicum in Literacy Professional Development

**Total Credit Hours 24**

## Special Education Generalist Endorsement Only

Added Special Education Endorsement to License

To be endorsed as a special education generalist for grades ages 5-21, a teacher must hold a bachelor's degree from a four-year accepted institution of higher education, be licensed at the elementary or secondary level, have completed the plan of study from one of the program options for the preparation of special education generalist, have passed the state special education assessment (i.e. Praxis), and have demonstrated all required state and national standards.

Recommendations for endorsements are made by the program, but endorsement is granted by the State of Colorado. Individual state requirements vary and may include teaching experience in addition to a valid teaching credential. Students should consult with the Colorado Department of Education (<http://www.cde.state.co>) or another state in which they wish to be endorsed for the most updated endorsement requirements.

**This course plan does NOT lead to MA degree.**

### **Courses:**

Listed in recommended sequence

- SPED 5030 - Understanding (dis)Ability in Contemporary Classrooms **or** LDFS 5240 - Cognition and Instruction if SPED 5030 is already completed
- SPED 5300 - Family, Professional, and Community Collaboration
- SPED 5151 - Slashing Stigmas: Promoting Positive Behaviors
- SPED 5500 - Transition and Secondary Methods in Special Education
- SPED 5740 - Intersections of Literacy, Culture, & Exceptionality
- SPED 5780 - Literacy Intervention for Exceptional Learners
- SPED 5140 - Assessment: Inquiry, Instruction, & Intervention
- SPED 5010 - Intentional Interventions for Exceptional Learners
- Additional Courses as Necessary\*\*

### **Minimum 24 Credit Hours**

\*\* Based on a comprehensive record review (i.e. teaching experience & classroom placements), SPED 5933: Internship & Site Seminar (Approximately 192 Hours or 24 days) may be required at the discretion of SPED program faculty.

### **Active Status:**

Students must complete their programs within seven years, maintaining a GPA of 3.0 (B average). Please refer to the Student Handbook for information on Academic Probation. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

## **Teacher Librarian Endorsement**

The Teacher Librarian K-12 endorsement program within the LDT master's degree program is a revised and approved teacher librarian education program that leads to the Colorado Department of Education (CDE) endorsement for teacher librarians. The program integrates 21st Century Learning Standards as approved by the American Association of School Libraries with Common CDE content standards and leadership competencies. As a teacher librarian, you will provide collaborative instructional planning, facilitation of professional learning, utilization of information literacy and media literacy, online instructional resources, and teacher leadership through the management of your library program.

The courses in this program are fully online unless specified otherwise. Once admitted, students begin a plan of study that typically takes about 18 months to complete. Consult the program website for more information <https://education.ucdenver.edu/academics/certificates-licenses-and-endorsements>

Admission decisions are based on undergraduate and graduate grades, external letters of recommendation and fit with the program as reflected in a letter of intent. Prospective students should consult the program website for complete admission procedures and requirements.

## Program Requirements

Students have a choice between a teacher librarian endorsement-only and a full master's program with or without a teacher-librarian endorsement. The endorsement requires a minimum of 24 graduate semester hours. Students complete a plan of study consisting of courses and professional field experience. Students must be licensed as a teacher or plan to complete a teacher license prior to seeking the additional endorsement as a Teacher Librarian. This is a Colorado Department of Education requirement.

Courses are offered only in certain semesters and courses should be taken in a particular sequence based on when you start the program. Advising is required prior to enrolling in a course, even as a non-degree student, in order to ensure the most effective course sequencing and availability of courses.

### 24 Credit Endorsement Degree Plan of Study

<b>Courses</b>	<b>Term</b>	<b>Credits</b>
SCHL 5100 - School Libraries in the Digital Age	Fall	3
SCHL 5030 - Information Literacy	Fall	3
SCHL 5160 - Managing School Libraries	Spring	3
SCHL 5200 - Promoting Literature in Schools	Summer	3
SCHL 5913 - School Library Field Experience	Fall	3
INTE 5300 - Media Literacy	Summer	3
Choose two courses from INTE or from one of SEHD or LDT certificate programs with advisor approval.	Varies	3

### Graduate Certificate Programs

# Applied Econometrics and Data Analytics Graduate Certificate

## Introduction

The Graduate Certificate in Applied Econometrics & Data Analytics provides students with a strong graduate-level foundation in modern applied econometrics and quantitative analysis. The unique analytic skill set delivered in this certificate is sought out by energy companies, defense contractors, health care agencies, consulting firms, financial institutions and other companies in the Denver area that are looking for employees who know how to use real world data to answer research questions. Upon earning the certificate, students will be able to:

1. Explain the potential outcomes framework and how it informs empirical research.
2. Distinguish between causal and correlational relationships.
3. Set-up randomized experiments and understand factors that could contaminate them.
4. Identify natural experiments and how to apply them in research.
5. Understand the Difference-in-Difference estimator and its applications.
6. Apply matching techniques.
7. Use Panel data models, such as fixed effects estimators.
8. Understand the use of instrumental variables and how they are applied in research.
9. Apply the Regression Discontinuity estimator and apply it in economic research.

These certificate requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their certificate advisor and CLAS advisor to confirm the best plans of study before finalizing them.

## Program Delivery

This is an on-campus program.

## General Requirements

[Click here for information about Academic Policies.](#)

## Admission Requirements

- Degree: BA/BS
- A minimum GPA of 3.00 is recommended

## **Application Process**

Applicants for a Graduate Certificate Program will send the following documents to the Certificate Program Director:

- Graduate Certificate Application Form:
- Official Transcripts
- Resume
- Letter of interest

Upon approval of the student's admission by the Graduate Certificate Program, the program director will send the student's certificate admission file to the Graduate School. The Graduate School will confirm the applicant's credentials, will determine whether the student meets the general academic requirements of the Graduate School, will admit the student and inform the student of his/her admission to the Graduate Certificate Program.

## **Additional Requirements**

- Students may be enrolled as a CU Denver graduate student in any discipline, or as a CU Denver non-degree seeking graduate student with a bachelor's degree.
- Students should have completed Introduction to Econometrics (ECON 4811), or equivalent coursework, or have professional experience in statistical analysis.
- International students must submit TOEFL scores or otherwise satisfy the University's English Language Proficiency requirement.

## **Certificate Requirements**

1. Students must complete a minimum of 12 ECON credit hours.
2. Students must complete all courses at the graduate level (5000 or above) to fulfill the requirements of the certificate.
3. Students must earn a minimum grade of B (3.0) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All credit hours for the certificate must be earned at the University of Colorado Denver.

## **Certificate Restrictions, Allowances and Recommendations**

1. Students have 7 years to complete this certificate.
2. Students should evaluate course descriptions to determine if the prerequisites or corequisites have been completed in order to move forward in the certificate.

3. No course may be taken more than twice.
4. Graduate level ECON credit counted towards the Graduate Certificate in Health Economics & Outcomes Research may be subsequently counted towards a CU Denver graduate degree in Economics. Certificate students are not guaranteed admission to the M.S. program in Health Economics. However, certificate students can apply to the M.S. program in economics at any time.
5. Students who complete the Graduate Certificate in Health Economics & Outcomes Research and later apply to the M.S. program in Health Economics at CU Denver may submit their certificate in place of GRE scores and letters of recommendation.
6. Students admitted to the M.A., M.S., or Ph.D. programs in economics at CU Denver may complete the graduate certificate concurrently with their degree program. However, courses that have already been counted towards any degree already awarded (undergraduate or graduate) may not be counted towards the certificate retroactively.

## Required Courses

Complete **all** the following ECON courses:

- ECON 5030 - Data Analysis with SAS
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II
- ECON 6053 - Seminar In Applied Economics I
- ECON 6054 - Seminar In Applied Economics II (3 credits total across ECON 6053 and 6054)

**Total: 12 Credit Hours**

# Applied Statistics Graduate Certificate

► Graduate School Policies and Procedures apply to this program.

**Coordinator:** Joshua French Ph.D.

**Telephone:** 303-315-1709

**E-mail:** [Joshua.French@ucdenver.edu](mailto:Joshua.French@ucdenver.edu)

**Web site:** <https://clas.ucdenver.edu/mathematical-and-statistical-sciences/graduate-certificate-applied-statistics>

There is a growing need for qualified statistical analysts of the ever-increasing amounts of data collected in business, industry, and government. The Certificate in Applied Statistics program is designed to give

students a strong background in statistical methodology and data analysis in preparation for opportunities in the workforce or for graduate studies.

Students will gain competence in such topics as descriptive statistics, estimation, confidence intervals, probability and inferential techniques, simple and multiple regression, analysis of variance, and more advanced topics. Students can focus on a particular application area such as economics, psychology, sociology, geology, or environmental science through the choice of an elective course and the data analysis project.

## **Admissions Requirements**

The minimum admission requirements for students applying for the Graduate Certificate in Applied Statistics are:

- A bachelor's degree (not necessarily in mathematics or statistics) from an accredited college or university
- A grade point average (GPA) of 3.0 or above during their bachelor's degree.
- Students must have taken three semesters of calculus (through multivariate calculus), linear algebra, and a calculus-based statistics course that covers basic probability and statistical distributions.

Subject to approval by the Director of the Statistical Programs and the Graduate Committee, students with prerequisite deficiencies may be admitted with the understanding that those deficiencies must be removed after admission. Courses taken to fulfill admission deficiencies may not be counted toward the certificate.

## **Certificate Requirements**

Four courses and a 1 hour independent study are required as detailed below.

### **Two Fundamental Courses in Statistics**

- MATH 5320 - Introduction to Mathematical Statistics  
Offered: SPRING
- MATH 5387 - Applied Regression Analysis  
Offered: FALL, SPRING, SUMMER

### **One Advanced Applications Course**

Topics vary from year to year. Course must be pre-approved by certificate coordinator and cannot be MATH 5830. Representative courses include:

- MATH 5394 - Experimental Designs
- MATH 5792 - Probabilistic Modeling

- MATH 6101 - Uncertainty Quantification
- MATH 6376 - Statistical Computing
- MATH 6380 - Stochastic Processes
- MATH 6384 - Spatial and Functional Data Analysis
- MATH 6388 - Statistical and Machine Learning
- MATH 7384 - Mathematical Probability
- MATH 7386 - Monte Carlo Methods
- MATH 7393 - Bayesian Statistics
- MATH 7826 - Topics in Probability and Statistics

An additional course given prior approval by the student's advisor and the Director of Statistical Programs.

## One Elective

Any statistics course in the Department of Mathematical and Statistical Sciences at the 5000 level or higher (must be pre-approved by the Certificate Coordinator). MATH 5830 cannot apply towards the certificate.

- ECON 5150 - Economic Forecasting
- ECON 5813 - Econometrics I
- ECON 5823 - Econometrics II
- ENV5 5600 - Applied Statistics for the Natural Sciences
- SOCY 5183 - Seminar: Quantitative Data Analysis

## Project Requirement

An independent data analysis project with a report and presentation to demonstrate proficiency with data analysis techniques and a statistical computing software package. Enroll for one hour of MATH 5840, Independent Study, or in an equivalent course pre-approved by the Certificate Coordinator.

## Additional Requirements

Students must maintain a 3.0 GPA or above in these courses with no credit given for courses with grades below B-. Since a certificate is a University of Colorado Denver certification of a student's specialized knowledge in an advanced subject area, all courses in the certificate program must be taken in residency at University of Colorado Denver. Students must be enrolled in one course per year to maintain their status in the certificate program.

Certificates must be completed within 3 years from matriculation.



# **Bioinnovation and Entrepreneurship Certificate**

The Business Schools graduate certificates are primarily intended to give individuals with an undergraduate degree in any discipline access to business courses that can help them succeed in their current job or even help them launch their own company.

Students can pursue one of our graduate certificates, even if they are not CU Denver students, without taking the GMAT. Credit earned as a part of the certificate DOES count towards your graduate business degree, should you choose to pursue a degree here. One such certificate is our Bioinnovation and Entrepreneurship Certificate.

## **Bioinnovation and Entrepreneurship Certificate**

The Certificate in Bioinnovation and Entrepreneurship is one-of-a-kind, and is geared to helping bioentrepreneurs achieve commercial success. Students have opportunities to participate in a number of Jake Jobs Center programs; including the annual business plan competition, internships in area businesses, speaker programs with local entrepreneurs, and connection with new ventures. Visit the Jake Jobs Center for Entrepreneurship to learn more about our entrepreneurship programs.

Bioinnovation Certificate Information

# **Commodities Certificate**

## **Commodities Certificate -- 9 Credits**

The J.P. Morgan Center for Commodities at the AACSB accredited CU Denver Business School provides a certificate in Commodities designed to introduce recent graduates to the fundamentals of commodities, from physical to financial. The Commodities certificate consists of three courses designed for recent college graduates with a bachelor's degree (or minor) in Business, Economics, International Studies or Math. Emphasis is placed on developing the knowledge and skills that provide a practical Commodities business foundation.

The Commodities Certificate will help prepare students to work in an environment in which Commodities are a major function in business operations. Coursework will integrate industry operating procedures and standards, including regulations and compliance. Emphasis will be placed on markets, supply chain and forecasting supply/demand functions for the overall financial benefit of the company.

**Complete 3 of the following courses:**

Complete three of the following courses:

- CMDT 6802 - Foundations of Commodities
- CMDT 6582 - Commodity Supply Chain Management
- CMDT 6682 - Commodity Valuation and Investment
- CMDT 6782 - Commodity Data Analysis

Please contact the Commodities Center for more information.

# Construction Project Management Graduate Certificate

The Construction Project Management (CPM) Certificate is a four-course certificate designed to build skills and teach critical management tools and techniques that enable individuals and teams to run projects within schedule, budget and quality requirements. This certificate focuses on the challenging and growing field of construction project management and is designed for working or aspiring professionals and graduate students interested in developing a level of expertise in construction project management.

The certificate starts with two required classes on project management that teach the fundamentals of the International Project Management Institute's (PMI) Project Management Body of Knowledge and provide a solid foundation for anyone involved in project or program management. The PMI program is based on rigorous standards and ongoing research to meet the real-world needs of organizations worldwide. The electives focus on various components of the PMI knowledge areas-project integration, scope, time, cost, quality, human resource, communications, risk, procurement and stakeholder management- from a construction engineering and management perspective.

You can earn graduate-level credit for each course successfully completed and earn the CPM certificate upon completion of the four courses and can take these courses as a non-degree student or by being enrolled at the University of Colorado Denver. Students must have a bachelor's degree to take these classes. These courses can also be used to partially fulfill requirements for the Master of Engineering in Construction Engineering and Management or other eligible graduate programs.

Contact the Department of Civil Engineering for more information.

## Courses

Required:

CVEN 5236 - PROJECT MANAGEMENT SYSTEMS

CVEN 5237 - ADVANCED TOPICS IN PROJECT MANAGEMENT

A minimum of two elective courses from the following list:

CVEN 5087 - ENGINEERING CONTRACTS

CVEN 5232 - CONSTRUCTION PLANNING AND CONTROL

CVEN 5233 - CONSTRUCTION COST ESTIMATING

CVEN 5234 - SUSTAINABLE CONSTRUCTION

CVEN 5235 - ADVANCED CONSTRUCTION ENGINEERING

CVEN 5238 - CONSTRUCTION LEADERSHIP

CVEN 5800/IWKS 4930 - CONSTRUCTION, BUSINESS AND INNOVATION

# Crime Analysis, Graduate Certificate

## Introduction

Students can earn the Crime Analysis graduate certificate by successfully completing 15 credit hours of approved coursework. Anyone who has completed a bachelor's degree from an accredited university is eligible to enroll in the program.

The certificate emphasizes Criminal Justice and Criminology-related subjects, but the analytic skills learned in the certificate training can be easily transferred to non-criminal justice and criminology fields.

With the Crime Analysis certificate, students will set themselves apart from other applicants in today's competitive job market by mastering analytical skills. Courses will be taught by current and former analysts (some of whom are current UCD faculty), while also gaining important theoretical and methodological knowledge from all UCD professors.

In addition to the stand-alone graduate certificate, students may also choose to complete a concentration in Crime Analysis as part of the Criminal Justice MCJ. Students interested in the Crime Analysis concentration must apply and enroll in the MCJ program within the School of Public Affairs (SPA) and must adhere to all master degree program requirements.

## Program Delivery

- Courses are offered on campus, online and in hybrid formats.

## Program Requirements

- Students must successfully complete 15 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.

- This program must be completed within 7 years.
1. Students must complete the required courses below:
    - CRJU 5003 - Research Methods
    - CRJU 5004 - Statistics for Criminal Justice
    - CRJU 5325 - Qualitative Methods for Criminal Justice - OR - PUAD 5007 - Qualitative Research Methods
    - CRJU 5015 - Intelligence Writing and Briefing - OR - ENGL 5175 - Writing in the Sciences
    - CRJU 5331 - Crime Analysis and GIS

# Cyber Security and Defense Graduate Certificate

## Graduate Certificate in Cyber Security and Defense

The certificate program in Cyber Security and Defense will prepare Computer Science professionals to identify, analyze, and mitigate technical cybersecurity related vulnerabilities, exploits and attacks against network and critical cyber infrastructure. The coursework emphasizes practical technical skills, analysis and research focused on current cybersecurity issues.

### Certificate Objectives

With the advent of greater network, application, and infrastructure connectivity there are more advanced methods of cyber-attack. This certificate program focuses on both the technical and analytical aspects of advanced cybersecurity and defense. Graduates of this certificate program will learn how to mitigate known cyber-related attacks against multiple network and infrastructure devices. Graduates will also learn how to design secure solutions, analyze new cyber-attacks and provide solutions that balance risk, security, privacy, cost, and operations. Each course in this certificate program provides project-based opportunities to extend technical skills in programming, network, operating system, infrastructure design and analysis as well as understanding prevention of cybersecurity breaches and incidents

### Certificate Eligibility

A BS or equivalent in Computer Science is ideal. Applicants with BS degrees other than computer science will be individually evaluated for adequate knowledge in programming, algorithms, and system design and may be assigned additional courses to take as part of the certificate program to address deficiencies in their background.

Students currently in BS-CS degree or in CS Scholars (Dual BS-MS) program at CU Denver need to have completed the undergraduate Operating Systems & Computer Networks and the recommendation of their academic advisor

## **Process to Attain Certificate Objectives**

Students will need to complete a sequence of four separate graduate-level courses

- CSCI 5742 -3 credits - Cybersecurity Programming and Analysis
- CSCI 5743 -3 credits - Cyber and Infrastructure Defense

Two of the following: (depending on student background)

- CSCI 5573 -3 credits - Operating Systems
- CSCI 5765 - 3 credits - Computer Networks
- CSCI 5799 - 3 credits - Cloud Computing

Students must take and pass each course with a grade of B- or better and earn a GPA of at least 3.0 to obtain the Cyber Security and Defense Certificate.

## **Course Objectives**

### **Cybersecurity Programming and Analysis**

This course covers programming concepts related to the security of operating systems, applications, networks, and mobile devices. This course will explore:

- Principles of network, database and operating system cybersecurity
- Use of multiple cybersecurity-related programming languages
- Building and extending existing scanning software
- Analysis and reporting of XML or JSON based cyber-related data stores
- Analysis and reporting of cyber-related NIST data stores
- Log analysis through programming and scripting
- Database programming and attack mitigation
- Analysis of intrusion prevention data
- Use of existing tool vs new tool creation analysis

### **Cyber Infrastructure and Defense**

This course covers analysis and defense techniques for operational networks and critical infrastructure. This course will explore:

- Design and use of cryptographic systems
- Network security firewalls and devices

- Intrusion detection systems
- Malware detection
- Distributed Denial of Service
- Infrastructure and Application attacks
- Emerging cybersecurity defense methods

## Operating Systems

Students study the principles of computer operating systems and their essential components. Team projects expose students to a variety of system design issues as they relate to the functionality and performance of the system.

## Computer Networks

An in-depth study of active research topics in computer networks

## Cloud Computing

This course studies fundamental designs and key technologies in Cloud Computing by reading technical articles, and conducting a semester group project.

# Design Build Graduate Certificate

**Contact:** Erik (Rick) Sommerfeld

**Telephone:** 303-315-0008

**E-mail:** erik.sommerfeld@ucdenver.edu

The College of Architecture and Planning offers a graduate certificate design build as an extension of the MArch program. The certificate course work totals 18 credit hours and emphasizes design build from the designer's point of view.

## Certificate Requirements

Five courses totaling 18 semester hours can be applied to the MArch graduation requirements:

- ARCH 6370 - Introduction To Design Build
- ARCH 6471 - Managing Quality & Risks
- ARCH 6472 - Architecture in a Single Source Project Delivery
- ARCH 6373 - Construction in Design Build

- ARCH 5140 - Design Studio IV

**Total: 18 Hours**

# Digital Studies Certificate

► Graduate School Policies and Procedures apply to this program.

## Introduction

From social media and mobile phones to the algorithms in self-driving cars, digital and information technologies are everywhere. The Digital Studies Certificate provides both degree-seeking and non-degree-seeking post-baccalaureate students with the opportunity to investigate the relationships between new communication technologies and society and to develop skills creating digital media messages and products. Students who attend any CU Denver school or college, or others who have BA degrees in any discipline are welcome.

Social sciences and humanities students can use this certificate to develop and demonstrate their technical skills, while science and engineering students can use it to build expertise in understanding the social and cultural aspects of new technologies.

Degree-seeking graduate students, or non-degree seeking post-baccalaureate students

Students who earn the Digital Studies Certificate will be able to demonstrate to a wide range of potential employers or graduate schools that they have both technical skills and the ability to critically analyze new media.

Students who successfully complete the Digital Studies Certificate will be able to:

- Describe and analyze the relationships between digital media and their cultural, social, political, and ethical contexts
- Use digital media to communicate messages to a variety of audiences
- Use digital media to solve problems in a range of disciplines and situations
- Use digital media and related analytical skills as career-building tools

## Program Delivery

- This is a hybrid program, with courses on-campus and online.

## Admissions and Declaring this Certificate

- Eligibility: CU Denver graduate students in any discipline can enroll in the program at any point in their graduate studies. Non-degree-seeking students with who have a bachelor degree in any discipline are welcome to apply.

- The Certificate can be earned as a stand-alone University certificate, or it can be applied to a current or future degree program.
- CLAS's Interdisciplinary Studies program sponsors the certificate, and the CLAS Director of Digital Initiatives will provide advising and administrative management.
- Any student wishing to declare the Digital Studies Certificate should schedule a certificate advising appointment with the CLAS Director of Digital Initiatives in order to register their intent to pursue it and to develop a curriculum plan.
- Application Procedures: Students enrolled in any CU Denver graduate program are encouraged to apply for the Digital Studies Certificate at any point in their studies. To apply, students in degree programs should print and complete a Digital Studies Certificate Application and submit it to the CLAS Director of Digital Initiatives. Non-degree-seeking students should also submit an official transcript from their undergraduate programs.
- Students who are not already enrolled at CU Denver must also complete an online Application for Non-Degree Admission prior to registering for courses.
- Individuals who are not currently admitted students seeking the graduate Public, Nonprofit, and Community Leadership Certificate would use the "quick admit" feature online or the extended studies admissions form previously developed by the College of Liberal Arts and Sciences.

### **General Requirements**

- [Click here for information about Academic Policies](#)

### **Program Requirements**

1. Students must complete a minimum of 12 credit hours in approved coursework.
2. Students must complete a minimum of 9 graduate level (5000 or above) credit hours in approved coursework.
3. Students must earn a minimum grade of B (3.0) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All credit hours for the certificate must be earned at the University of Colorado Denver.

Students must complete the following: 1 course (3 credits) from each of the 3 clusters (for a total of 9 credits), plus the remaining 3 credits from any one of the three clusters.

## **Digital Studies Certificate Course Clusters**



- **Theory and Analysis:** Courses in this cluster focus on theorizing, explaining, and describing the relationships between digital, media, and communication technologies and society. They enable students to critically assess and analyze digital media and information, such as understanding the biases in seemingly neutral Google search results or examining how people use Twitter to build social movements
- **Digital Media Production:** Courses in this cluster focus on developing hands-on skills in the use of digital, media, and communication technologies. They provide opportunities for students to develop their skills with a variety of digital tools, such as digital photography, mapping, and social media management.
- **Integration:** Courses in this cluster bring together both understanding and using digital, media, and communication technologies.

**Other courses** may apply to each cluster with the approval of the Director of Digital Initiatives certificate advisor.

### **Theory and Analysis Cluster**

- BUSN 6610 - Information Systems Strategy
- ISMG 6180 - Information Systems Strategy
- COMM 4760 - New Media and Society
- ENTP 6022 - Digital Strategy for Entrepreneurs
- PHIL 4920 - Philosophy of Media and Technology
- INTE 5320 - Games and Learning
- ENGL 5165 - Literacy and Technology

### **Digital Media Production Cluster**

- GEOG 5080 - Introduction to GIS
- GEOG 5081 - Cartography and Computer Mapping
- IWKS 5170 - 3D Design, Computation and Prototyping
- IWKS 5350 - Computational Foundations of Innovation
- INTE 5340 - Learning with Digital Stories
- INTE 5680 - Producing Media for Learning

### **Integration Cluster**

- COMM 4558 - Digital Health Narratives
- ENGL 4190 - Advanced Topics in Writing & Digital Studies
- HIST 5260 - Digital Studies and Strategies

- INTE 5665 - Learning with Social Media and Networking
- INTE 5711 - Creative Designs for Instructional Materials
- IWKS 5700 - Innovation and Society
- IWKS 5180 - Inworks: Choose Your Own Adventure: Experiences in Design, Innovation and Prototyping
- IWKS 5200 - Data Science for Innovators
- PUAD 4003 - Effective Communication for Public Service

# Disasters, Hazards, and Emergency Management (DHEM), Graduate Certificate

## Introduction

The graduate concentration and certificate in Disasters, Hazards and Emergency Management (DHEM) provides advanced education in the management of emergencies, hazards, disasters, and community resilience. The DHEM program is designed to meet the needs of students who wish to work, or are currently working, in the field of natural and man-made hazards, community resilience, and emergency management.

The DHEM program applies an interdisciplinary approach to education that:

- Emphasizes high-level skills of critical thinking, learning, adaptation and policy analysis
- Focuses on the all-hazards emergency management model (encompassing natural and man-made hazards, such as wildfires, hurricanes, technological or industrial risks), and community resilience.

Students completing the DHEM concentration program will have the knowledge and skills necessary to assess and manage a broad range of hazards and disasters, and to understand the policy and managerial environment in which emergency management occurs.

Students interested in obtaining a concentration in DHEM within a Master of Public Administration (MPA) or Master of Criminal Justice (MCJ) program must apply and enroll in the MPA or MCJ program within the School of Public Affairs and must adhere to all master's degree program requirements.

In addition to the stand-alone graduate certificate, students may also choose to complete a concentration in EMHS as part of the Criminal Justice MCJ or the Public Administration MPA. Students interested in the EMHS concentration must apply and enroll in the MCJ or MPA program within the School of Public Affairs and must adhere to all master degree program requirements.

For more information, please the School of Public Affairs website.

## Program Delivery

- Courses are offered on campus, online and in hybrid formats.

## Program Requirements

- Students must successfully complete 12 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.
- Students must complete the following required courses:
  - CRJU/PUAD 5720 - Public Policies for Hazards and Disasters
  - One core course from the list below:
    - CRJU or PUAD 5650 - Public Service in Emergency Management and Homeland Security
    - CRJU or PUAD 5655 - Principles of Emergency Management
    - URPL 6645 - Disaster/ClimateChangePlanning
- Students must complete 2 elective courses from the list below or select unlisted courses that have been approved in advance by the concentration director:
  - PUAD 5130 - Collaboration Across Sectors
  - PUAD 5271 - Managing Conflict and Change
  - PUAD 5320 - Public Policy Analysis
  - PUAD 5350 - Program Evaluation
  - PUAD 5440 - Negotiation and Conflict Resolution
  - CRJU or PUAD 5644 - Environmental and Hazards Law
  - PUAD 5631 - Seminar in Environmental Politics and Policy
  - PUAD 5632 - Seminar in Environmental Management

## Early Literacy Certificate

This online certificate offers primary grade teachers, preschool teachers and para-educators greater background in the development, assessment and instruction of literacy for young children, native speakers of English and English language learners. Administrators and intermediate-grade teachers have also found this program to be a great way to solidify their understandings of initial literacy development to help them best meet the needs of struggling learners in the upper grades.

### Certificate Structure

This certificate totals 9 credit hours in the specialty area of early literacy. Courses may be taken in any order and the certificate may be completed in one year.

### **Courses**

- LCRT 5210 - Literacy Development Pre K-3rd Grade
- LCRT 5220 - Literacy Routines and Assessment, Pre K-3rd Grade
- LCRT 5230 - Early Literacy Instruction

# **Education Policy, Graduate Certificate**

## **Introduction**

The Education Policy graduate certificate offered by the School of Public Affairs provides students with an understanding of how K-12 education is governed, financed, and regulated in the United States. Students will become familiar with the interaction between federal, state and local policies and with the context in which education policy is formulated and implemented.

## **Program Delivery**

- Courses are offered on campus, online and in hybrid formats.

## **Program Requirements**

- Students must successfully complete 12 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.
- Students must complete the following core courses:
  - PUAD 5200 - Education Policy
  - PUAD 5210 - Education Finance
- Students must complete 2 elective courses from the list below or select unlisted courses that have been approved in advance by the concentration director:
  - PUAD 5180 - Social Entrepreneurship
  - PUAD 5310 - Policy Formulation & Implementation
  - PUAD 5320 - Public Policy Analysis
  - PUAD 5350 - Program Evaluation
  - PUAD 5460 - Political Advocacy
  - PUAD 5628 - Social Problems and Policies
  - PUAD 6600 - Special Topics: Public Administration

- Any graduate-level course offered by the School of Education and Human Development, with the approval of the concentration director.

# Emergency Management and Homeland Security (EMHS), Graduate Certificate

## Introduction

Students can earn a graduate certificate in Emergency Management and Homeland Security (EMHS) by successfully completing 12 credit hours of approved coursework.

The certificate in Emergency Management and Homeland Security (EMHS) provides advanced education in the management of emergencies, hazards, disasters, and homeland security. The EMHS program is designed to meet the needs of students who wish to work, or are currently working, in the field of emergency management and homeland security.

The EMHS program applies an interdisciplinary approach to education that:

- Emphasizes high-level skills of critical thinking, learning, adaptation and policy analysis
- Focuses on the all-hazards emergency management model (encompassing natural hazards, technological hazards, and terrorism).

Students completing the EMHS certificate program will have the knowledge and skills necessary to assess and manage a broad range of hazards and disasters, and to understand the policy environment in which emergency management occurs.

In addition to the stand-alone graduate certificate, students may also choose to complete a concentration in EMHS as part of the Criminal Justice, MCJ or the Public Administration, MPA. Students interested in the EMHS concentration must apply and enroll in the MCJ or MPA program within the School of Public Affairs (SPA) and must adhere to all master degree program requirements.

For more information, please the School of Public Affairs website.

## Program Delivery

- Courses are offered on campus, online and in hybrid formats.

## Program Requirements

- Students must successfully complete 12 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.

Students must complete the following required courses:

- CRJU 5650 - Public Service in Emergency Management and Homeland Security

One core course from the list below:

- PUAD 5655 - Principles of Emergency Management
- CRJU 5720 - Public Policies for Hazards and Disasters - OR - PUAD 5720 - Public Policies for Hazards and Disasters
- URPL 6645 - Disaster/ClimateChangePlanning

Students must complete 2 elective courses from the list below or select unlisted courses that have been approved in advance by the concentration director:

- CRJU 5510 - Contemporary Issues in Law Enforcement
- PUAD 5130 - Collaboration Across Sectors
- PUAD 5271 - Managing Conflict and Change
- PUAD 5320 - Public Policy Analysis
- PUAD 5350 - Program Evaluation
- PUAD 5440 - Negotiation and Conflict Resolution
- PUAD 5631 - Seminar in Environmental Politics and Policy
- PUAD 5632 - Seminar in Environmental Management
- PUAD /CRJU 5644 - Environmental and Hazards Law
- ENVS 6200 - Risk Assessment
- GEOG 5080 - Introduction to GIS
- GEOG 5710 - Disasters, Climate Change, and Health

## **Entrepreneurship Certificate**

The Business Schools undergraduate certificates are primarily intended for students currently pursuing a degree in any undergraduate discipline that want to expand their business knowledge to give themselves a leg up when they enter the work force. However, they can also be taken by students with only a high school diploma.

Students can pursue one of our undergraduate certificates, even if they are not CU Denver students. Credit earned as a part of the certificate DOES count towards your undergraduate degree, should you choose to pursue a degree here. One such undergraduate certificate is listed below:

### **Launchpad Entrepreneurship Certificate**

This certificate can be earned in either downtown Denver at the Jake Jobs Center for Entrepreneurship or CU South Denver.

The Jake Jobs Center for Entrepreneurship is offering an affordable program in one of the fastest growing business segments in the country-Innovation and Entrepreneurship. All courses are taught by faculty from the Jake Jobs Center for Entrepreneurship at CU Denver. You will find many opportunities including scholarships, mentoring, and networking. You will gain skills that prepare you to start a successful business or become an entrepreneurial asset to an existing company.

### **Benefits:**

- Experiential opportunities
- Condensed 8-Week courses
- Two convenient Denver locations
- Cost effective - Scholarships available
- No GPA requirements or prerequisites

For more details about Launchpad courses and registration, visit the Launchpad Certificate page.

The Business Schools also offers post-graduate certificates which are primarily intended to give individuals with an undergraduate degree in any discipline access to business courses that can help them succeed in their current job or even help them launch their own company.

Students can pursue one of our graduate certificates, even if they are not CU Denver students, without taking the GMAT. Credit earned as a part of the certificate DOES count towards your graduate business degree, should you choose to pursue a degree here. One of the post-graduate certificates is listed below:

A Certificate in Entrepreneurship gives students the ability to marshal resources to seize new business opportunities which have uncertain outcomes. The post-bachelors certificate introduces students to fundamental entrepreneurial concepts plus provides the flexibility to allow them to explore specialized areas of interest including cutting-edge social entrepreneurship, new venture design, finance structuring, legal issues, leadership, marketing and personal branding, new product development and business plan creation. Visit the Jake Jobs Center for Entrepreneurship to learn more about our entrepreneurship programs.

## **Environmental Policy And Management (EPM), Graduate Certificate**

### **Introduction**

The graduate certificate in Environmental Policy, Management and Law provides an understanding of how our natural environment is governed and affected by relationships between various entities, including:

- legislatures
- administrative agencies
- courts
- federal, state, and local governments
- government and the nonprofit and private sectors
- government and the public it has been established to serve

In addition to the stand-alone graduate certificate, students may also choose to complete a concentration in EPM as part of the Criminal Justice, MCJ or the Public Administration, MPA. Students interested in the EPM concentration must apply and enroll in the MCJ or MPA program within the School of Public Affairs (SPA) and must adhere to all master degree program requirements.

For more information, please the School of Public Affairs website.

## Program Delivery

- Courses are offered on campus, online and in hybrid formats.

## Program Requirements

- Students must successfully complete 12 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.

Students must complete the following courses:

- PUAD 5631 - Seminar in Environmental Politics and Policy
- PUAD 5632 - Seminar in Environmental Management

Students must complete 2 elective courses from the list below or select unlisted courses that have been approved in advance by the concentration director:

- PUAD 5410 - Administrative Law
- PUAD 5420 - Law and Public Policy
- PUAD 5628 - Social Problems and Policies
- PUAD 5644 - Environmental and Hazards Law
- PUAD 5650 - Public Service in Emergency Management and Homeland Security
- PUAD 5740 - Sustainable Energy Policy
- PUAD 6600 - Special Topics: Public Administration
- HIST 5228 - Western Art and Architecture
- LDAR 5530 - Form and Formation of Cities
- LDAR 6686 - Special Topics: Landscape Architecture
- COMM 5620 - Health Risk Communication



# Environmental Science Education Graduate Certificate

► Graduate School Policies and Procedures apply to this program.

**Certificate Advisor:** Bryan Wee

**E-mail:** [bryan.wee@ucdenver.edu](mailto:bryan.wee@ucdenver.edu)

## Introduction

Please click [here](#) to see Geography and Environmental Sciences Department information.

### *Certificate Objectives*

1. Students will synthesize environmental science content with relevant educational practices
2. Students will recognize, understand and apply environmental science education in either formal or informal educational settings
3. Students will utilize education research methods to support disciplinary learning
4. Students will identify a broader set of career options (see list below)

### *Sample list of career options*

- K-12 Teacher or curricular specialist
- UNICEF/UNESCO/World Heritage Foundation
- National Parks Service or U.S. Forest Service
- Non-profit organizations (e.g. Colorado Alliance for Environmental Education)
- Regulatory Agencies (e.g. U.S. Environmental Protection Agency)
- Environmental and/or Educational Consultancy Firms
- Adjunct lecturer or instructor

## Program Delivery

This is both an on-campus and field-based program.

## Declaring This Certificate

Please see the Certificate advisor.

## General Requirements

Click [here](#) for information about Academic Policies.

## Eligibility

Environmental Science Education has broad applications across many disciplines. Students who already hold a bachelor's degree from CU Denver or other institutions in any major may be admitted as a CU Denver graduate student or a non-degree-seeking student, depending on enrollment status.

## **Current CU Denver Students**

A student may begin the program in any semester or during the summer by making arrangements with the Certificate advisor. This should be done as soon as you have decided to pursue the certificate, and no later than the semester previous to completion of all the courses required to obtain the certificate.

## **Former CU Denver Students or Graduates of Other Universities**

In order to start the certificate program, you will need to apply to the university as a non-degree seeking student if you are not already enrolled in a graduate program within CU Denver. Once accepted, you will be able to enroll in all of the appropriate classes.

*Admissions:* <http://www.ucdenver.edu/admissions/non-degree/Pages/default.aspx>.

Specific questions about enrollment or tuition should be addressed directly to the University Registrar's Office or Bursar's Office.

## **PROGRAM EXPECTATIONS**

Because a certificate is a CU Denver certification of a students' specialized knowledge in an advanced subject matter, all courses in a certificate program are expected to be taken in residency at CU Denver. Only in rare circumstances will exceptions be made regarding this policy. Courses taken within the Environmental Science Education Certificate may be used towards one other degree requirement. Any changes to the standard curriculum program must be approved in writing by the Certificate advisor. Please pay close attention to prerequisites for specific courses.

## **PERFORMANCE EXPECTATIONS**

Students must earn a 3.0 GPA average with no course below a "B-" in all approved courses for the certificate. For graduate and non-degree seeking students, the certificate will be awarded upon completion of the program and be added to the student's transcript.

## **Certificate Requirements**

As a graduate or non-degree student at CU Denver, the requirements for the Environmental Science Education Certificate are two core classes and two electives, totaling 12 hours. All classes must be taken at the graduate level (5000 or above) to fulfill the requirements of the Certificate.

## **Required Courses (6 credit hours)**

- ENVS 5340 - Equity & Culture in Science Education: Local/Global
- ENVS 5650 - Environmental Education

## **Electives (6 credit hours)**

Select from the following list of electives. Students should consult with the certificate advisor about other courses that may count toward this requirement.

- ANTH 5170 - Culture and the Environment
- BIOL 5154 - Conservation Biology
- COMM 5282 - Environmental Communication
- ENVS 5020 - Earth Environments and Human Impacts
- ENVS 5305 - Water Quality and Resources
- ENVS 5470 - Sustainable Urban Agriculture Field Study II
- GEOG 5265 - Sustainability in Resources Management
- GEOG 5335 - Contemporary Environmental Issues
- GEOG 5440 - Science, Policy and the Environment
- PSCI 5354 - Seminar: Environmental Politics and Policy

# **Free and Open Source Software for Geospatial Applications Graduate Certificate**

Graduate School Policies and Procedures apply to this program

Certificate Advisor: Rafael Moreno  
E-mail: rafael.moreno@ucdenver.edu

## **Certificate Objectives:**

1. Provide students and working geospatial professionals with the knowledge and skills for the effective use and development of FOSS4G solutions in diverse application contexts. This complements and enhances the knowledge and skills they have in the use of geospatial proprietary software solutions.
2. Students will be exposed to several FOSS4G alternatives to address the needs of a geospatial information infrastructure from desktop, database management systems, systems automation/customization, all the way to Web/Cloud-based applications and enterprise level solutions.
3. Students will acquire the necessary knowledge and skills to effectively use the most advanced FOSS4G alternatives to develop solutions for each of levels of a geospatial information infrastructure previously mentioned.
4. Students will have the knowledge and hands-on skills that will enable them to design and develop hybrid geospatial information infrastructures that make use of proprietary software and FOSS4G incorporating each them in a combination that maximizes efficiency of the end infrastructure.

## **Current CU Denver Students**

A student may begin the program in any semester or during the summer by making arrangements with the GISci Certificate Coordinator. This should be done as soon as you have decided to pursue the certificate, and no later than the semester previous to completion of all the courses required to obtain the certificate.

## **Former CU Denver Students or Graduates of Other Universities**

In order to start the certificate program, you will need to apply to the university as a non-degree seeking student if you are not already enrolled in a graduate program within CU Denver. Once accepted, you will be able to enroll in all of the appropriate classes.

*Admissions:* <http://www.ucdenver.edu/admissions/non-degree/Pages/default.aspx>.

Specific questions about enrollment or tuition should be addressed directly to the University Registrar's Office or Bursar's Office.

## **PERFORMANCE EXPECTATIONS**

Students must earn a 3.0 GPA average with no course below a "B-" in all approved courses for the certificate. For graduate and non-degree seeking students, the certificate will be awarded upon completion of the program and be added to the student's transcript.

## Credit hour requirements:

A total of 12 credits are required for the certificate. The students will have the option to take other courses above and beyond the core requirements for the certificate.

## Required Courses

- GEOG 5091 - Open Source Software for Geospatial Applications

*This course exposes students to the diversity of FOSS4G solutions that exist for each of the elements of geospatial information infrastructure. They acquire the necessary hands-on skills to effectively use one FOSS4G to address the needs of each of the levels of a geospatial information infrastructure.*

- GEOG 5092 - GIS Programming and Automation

*Students learn programming principles and techniques to automate processes and customize a geographic information system (GIS), and to integrate and coordinate the functions of diverse geospatial software (e.g. a database management system with a GIS).*

- CVEN 5385 - GIS Relational Database Systems

*Students learn the principles and techniques to design a spatial database and perform multiple analyses and functions in a FOSS4G spatial database management system.*

- GEOG 5086 - FOSS4G Systems Integration

*This course functions as the capstone for the certificate. It concentrates on applying all the knowledge and skills previously obtained and adding more in the area of integration of geospatial information infrastructures based on FOSS4G. Students work on integrating systems from desktop to Web/Cloud-based applications.*

## Optional Courses

Students can choose to take one or more of the following courses that can complement their formation in specific topics. However, these course are not required as part of the certificate program.

- BIOL 3763 - Biostatistics
- BIOL 6764 - Biological Data Analysis

*Both of these courses use the open source software R for environmental data analysis including spatial statistics and geostatistics.*

- CVEN 5389 - Open Source Desktop Mapping, Modeling & Data Processing

*This course uses different FOSS4G for the creation of Web-based mapping solutions.*

- GEOG 5050 - Applied Spatial Statistics

*This course is offered annually as part of the GES offerings. It also uses R for data analysis including spatial statistics and geostatistics.*

- GEOG 5095 - Deploying GIS Functionality on the Web

*This course uses FOSS4G for database analysis and creation of Web-based GIS systems.*

# Gender-Based Violence (GBV) Graduate Certificate

## Introduction

The Gender-Based Violence (GBV) Graduate Certificate provides an interdisciplinary perspective on crime, the formulation of laws and codes, and the criminal legal system and its intersection with gender and violence. Courses within the GBV Graduate Certificate are conducted in the hybrid format. All four of the GBV courses will meet in-person for a one-week intensive session followed by online instruction for the remainder of the semester.

In addition to the stand-alone Graduate Certificate, students may also choose to complete a concentration in Gender-Based Violence as part of the Criminal Justice, MCJ or the Public Administration, MPA. Students interested in the GBV concentration must apply and enroll in

the MCJ or MPA program within the School of Public Affairs (SPA) and must adhere to all master degree program requirements.

For more information, please the School of Public Affairs website.

## Program Delivery

- Courses are offered on campus, online, and in hybrid formats.

## Program Requirements

- Students must successfully complete 12 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.

Students must complete the following required courses:

- CRJU/PUAD 5910 - Nature and Scope of Interpersonal Violence
- CRJU/PUAD 5920 - The Psychology of Interpersonal Violence
- CRJU/PUAD 5930 - Interpersonal Violence Law and Policy
- CRJU/PUAD 5940 - Interpersonal Violence Leadership, Advocacy, and Social Change

# Geographic Information Science Graduate Certificate

► Graduate School Policies and Procedures apply to this program.

**GISci Certificate Advisor:** Matt Cross

**E-mail:** [matthew.cross@ucdenver.edu](mailto:matthew.cross@ucdenver.edu)

The Geographic Information Science (GISci) Certificate in the Department of Geography and Environmental Sciences is designed to provide CU Denver undergraduates and graduates, as well as non-degree seeking students interested in professional development, with proficiency in the application of spatial thinking, geographic information science, and geo-technologies in the social and physical sciences, spanning the natural, built and human environments and emphasizing human-environment interconnections. The GISci Certificate core establishes a broad foundation in spatial technologies and methodologies, including geographic information systems, remote sensing, cartography, spatial extensions to database management systems, and statistics. From this base, students can delve into various specialization areas depending on their interests.

Upon successful completion of the certificate, students will be able to:

- articulate and apply basic theoretical underpinnings of spatial analytical principles, methodologies, and techniques;
- effectively utilize at least three different types of software used for spatial analysis;
- apply geo-spatial thinking, geographic information science, and geo-technologies appropriately; and
- analyze diverse real-world problems that have a spatial dimension and develop alternative solutions to them.

## **Eligibility**

Geographic information science and geo-technologies have broad applications across many disciplines. Students who already hold a bachelor's degree from CU Denver or other institutions in any major may be admitted as a CU Denver graduate student or a non-degree-seeking student, depending on enrollment status.

You must complete the Application for GISci Certificate, which can be obtained from the GISci Certificate Coordinator. The application requires copies of former transcripts indicating that an undergraduate degree has been previously granted or an unofficial transcript from CU Denver showing that you are a current undergraduate or graduate student. This application is required to be formally registered in the GISci Certificate program, and must be completed no later than the semester prior to the scheduled completion of the certificate.

## **Current CU Denver Students**

A student may begin the program in any semester or during the summer by making arrangements with the GISci Certificate Coordinator. This should be done as soon as you have decided to pursue the certificate, and no later than the semester previous to completion of all the courses required to obtain the certificate.

## **Former CU Denver Students or Graduates of Other Universities**

In order to start the certificate program, you will need to apply to the university as a non-degree seeking student if you are not already enrolled in a graduate program within CU Denver. Once accepted, you will be able to enroll in all of the appropriate classes.

*Admissions:* <http://www.ucdenver.edu/admissions/non-degree/Pages/default.aspx>.

Specific questions about enrollment or tuition should be addressed directly to the University Registrar's Office or Bursar's Office.

## **PROGRAM EXPECTATIONS**



To earn the certificate, students must complete a specific set of geospatial classes. Because a certificate is a CU Denver certification of a students' specialized knowledge in an advanced subject matter, all courses in a certificate program are expected to be taken in residency at CU Denver. Only in rare circumstances will exceptions be made regarding this policy. Courses taken within the GISci Certificate Program may be used towards one other degree requirement. Any changes to the standard curriculum program must be approved in writing by the GISci Certificate Coordinator. Please pay close attention to prerequisites for specific courses.

## **PERFORMANCE EXPECTATIONS**

Students must earn a 3.0 GPA average with no course below a "B-" in all approved courses for the certificate. For graduate and non-degree seeking students, the certificate will be awarded upon completion of the program and be added to the student's transcript.

## **Course Requirements**

As a graduate or graduate-non-degree student at CU Denver, the requirements for the GISci Certificate are four core classes and two electives, totaling 18 hours. All classes must be taken at the graduate level (5000 or above) to fulfill the requirements of the Graduate GISci Certificate. It is assumed that graduate students have some prior knowledge in basic mapping skills, therefore GEOG 2080 is not required. All core classes are required for completion of the GIS Certificate and are offered at least on a yearly basis. The statistics course requirement can be filled by enrolling in the GEOG 5050 Applied Spatial Statistics, or one of several graduate level (5000 or above) classes offered by CU Denver and approved by the certificate coordinator. There is a prerequisite requirement of a basic statistics class taken at the undergraduate college level prior to taking any graduate level statistics class at CU Denver. Any additional two electives can be taken from the elective list. If you are currently a graduate student at CU Denver and also attended CU Denver as an undergraduate, you may apply only one 3 credit hour undergraduate course (4000 level) to the GISci Certificate. The required classes are as follows:

## **Prerequisite Course**

Note: this course does NOT count as part of the total credits required for the certificate.

- GEOG 2080 - Introduction to Mapping and Map Analysis

## **Core Courses**

- GEOG 5050 - Applied Spatial Statistics
- GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing

- (May also take as GEOL 5060)
  - GEOG 5080 - Introduction to GIS
  - GEOG 5081 - Cartography and Computer Mapping
- OR** equivalent course approved by the GISci Certificate Coordinator

**Total: 12 Hours**

**Elective (choose two from the following):**

- GEOG 4086 - FOSS4G Systems Integration
  - GEOG 5070 - Remote Sensing II: Advanced Remote Sensing  
(May also take as GEOL 5070)
  - GEOG 5085 - GIS Applications for the Urban Environment
  - GEOG 5090 - Environmental Modeling with Geographic Information Systems
  - GEOG 5091 - Open Source Software for Geospatial Applications
  - GEOG 5092 - GIS Programming and Automation
  - GEOG 5095 - Deploying GIS Functionality on the Web
  - GEOG 5235 - GIS Applications in the Health Sciences
  - CVEN 5382 - Geospatial Data Development
  - CVEN 5385 - GIS Relational Database Systems
- One of these courses may be substituted with an elective approved by the GISci Certificate Coordinator

**Total: 6 Hours**

**Certificate Total: 18 Hours**

# **Geospatial Information Science Graduate Certificate**

**Contact:** Michael Hinke (Co-coordinator)

**E-mail:** michael.hinke@ucdenver.edu

**Contact:** Austin Troy (Co-coordinator)

**Telephone:** 303-315-1006

**Email:** austin.troy@ucdenver.edu

Geospatial Information Science (GIS), known to some as "computer mapping," is used to store, manage, analyze, synthesize, and display spatial data and information. In the College of Architecture and Planning we use GIS to analyze and understand space, to answer the place-

based questions posed by our stakeholders and our clients, and to create the planning- and research-oriented maps that are critical to communicating with our stakeholders. Our work with GIS in the college is built on the many advances in Geospatial Information Science over the last 40 years.

This certificate program is intended for motivated people with a strong interest in the application of GIS to the design and planning professions. It is targeted both at students currently enrolled in a University of Colorado degree program who wish to add a credential to their degree, and working professionals who do not wish to enroll as degree-seeking students, but who wish to pursue a certificate to improve job skills.

Students who earn this Certificate through the College of Architecture and Planning at the University of Colorado Denver will exit the program with the following:

- An understanding of GIS theory and concepts
- Technical mastery of general GIS methods using ArcGIS as well as familiarity with remote sensing
- Familiarity with common public geospatial data sources, as well as metadata standards
- Knowledge of data interoperability, including how to move data and maps from one software platform to another; examples of software includes Adobe Creative Suite, 3D Studio Max, SketchUp, RhinoTerrain, ArcMap, and Quantum GIS
- Specialized skills in geospatial technologies and methods related to the design and planning professions, including rendering and visualizations, infrastructure and transportation network analysis, cadastral mapping, site selection and analysis, geodesign, and many others.

GIS is a rapidly growing field and an increasingly important job skill. GIS skills are showing up as requirements for architects, landscape architects and planners. Our GIS Certificate holders are currently working as: environmental planners, transportation planners, city planners, urban designers, landscape architects and software developers.

A minimum of a 3.0 GPA in all GIS related course work is required to earn the GIS Certificate, and for certificate credit a B- or better is required in all GIS certificate courses.

## **Course Requirements**

The GIS Certificate is designed to supplement students' course work in their field of study. Degree seeking students in the College of Architecture and Planning wishing to pursue the GIS Certificate are expected to take 12 additional semester hours of course work to complete the certificate.

Achieving the GIS certificate in your degree program requires you to follow the appropriate advising sheet.

## **Part 1: Introductory GIS class (3 semester hours)**

- URPL 6250 - GIS for Urban Planning
- LDAR 5540 - Introduction to GIS

## **Part 2: Advanced GIS methods class (3 semester hours)**

- URPL 6260 - Advanced Geo-Spatial Methods

## **Part 3: One of the following (3 semester hours)**

- GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing
- GEOG 5070 - Remote Sensing II: Advanced Remote Sensing
- Boulder: GEOG 5093 - Remote Sensing of the Environment (cost and financial aid availability may vary)

## **Part 4: Specialized advanced classes (9 semester hours)**

- GEOG 5081 - Cartography and Computer Mapping
- GEOG 5085 - GIS Applications for the Urban Environment
- GEOG 5090 - Environmental Modeling with Geographic Information Systems
- GEOG 5091 - Open Source Software for Geospatial Applications
- GEOG 5092 - GIS Programming and Automation
- GEOG 5095 - Deploying GIS Functionality on the Web
- GEOG 5230 - Hazard Mitigation and Vulnerability Assessment
- CVEN 5382 - Geospatial Data Development
- CVEN 5385 - GIS Relational Database Systems
- CVEN 5800 - Special Topics - Geomatics for GIS
- LDAR 6686 - Special Topics: Landscape Architecture - Advanced Topics in GIS
- Any course from the Part 3 list (either track) not already used to fulfill the Part 3 requirement
- Up to 3 semester hours from a studio course where intensive GIS is used. This must be done by submitting a petition to the coordinators describing the GIS activities undertaken.

- Up to 3 semester hours for an internship using GIS in a planning or design context, also by petition. Please see the coordinators before you start the process of looking for an internship.
- Other relevant courses by permission

## **Part 5: Portfolio**

Students pursuing the GIS Certificate are strongly encouraged to assemble a digital portfolio of GIS-related work undertaken in classes in the College of Architecture and Planning.

The Certificate Coordinators and the Academic Advisors have materials to help students prepare their portfolios. Students are encouraged to work with the GIS faculty to cater their portfolio to their intended careers.

Note: Students pursuing the GIS Certificate in the College of Architecture and Planning are expected to use GIS data and software in their design and planning related classes.

## **Graduation**

Students who have completed all of the requirements for the GIS Certificate must submit their GIS Certificate form at the start of the semester that they plan to graduate.

**Hours: 18 semester hours**

## **Eligibility, Application, and Tuition and Fee Information**

The certificate program is open to all. Applicants already enrolled in a University of Colorado degree program need only submit an internal application to the CAP GIS certificate program. Applicants who are not currently enrolled in a degree program must apply to CU Denver as non-degree seeking students and also submit an application to the CAP GIS certificate program. More details on the process are available from the coordinators.

Apply as a non-degree-seeking student in the Admissions area of the university website.

Find tuition and fee information in the Bursar's Office area of the university website.

Students interested in pursuing the GIS Certificate may start the conversation with their academic advisors, or one of the GIS coordinators. Michael Hinke serves as the director of the interdisciplinary GIS teaching lab on campus (the Facility for Advanced Spatial Technology), and he is happy to talk to students who need more information about classes taught in Geography and Civil Engineering.

## **Global History Graduate Certificate**

## Introduction

The Global History Graduate Certificate provides CU Denver graduate students and the wider community the opportunity to explore topics in Global History while simultaneously learning professional skills in historical research and historical dissemination. This Certificate is designed for students interested in pursuing a graduate-level education in Global History and for professionals seeking accreditation and/or promotion in the fields of education, museums, historic preservation, government, law, and the arts.

The certificate can stand on its own or it can serve as a stepping stone to a Master's Degree in History.

Upon successful completion of the certificate, students will:

- Be able to pursue independent historical research projects
- Be able to analyze debates among historians
- Be able to analyze historical documents and develop arguments from them

## Program Delivery

This program has one on-campus requirement and the remainder of the certificate can be completed on campus or online.

### Declaring This Certificate

Applicants must have a B.A. or B.S. degree.

Interested students must register their intent to complete the certificate with the History Department Graduate Advisor, Ryan Crewe (Ryan.Crewe@ucdenver.edu). Students already enrolled in a graduate program at CU Denver can begin their certificate work at any point during their studies. Non-degree students must apply to the university as a non-degree seeking student.

## General Requirements

[Click here](#) for information about Academic Policies.

## Program Requirements

1. Students must complete a minimum of 12 HIST credit hours.
2. Students must complete all HIST credit hours at the graduate level (5000 and above).

3. Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA.
4. All credits for the certificate must be completed with CU Denver faculty.

## Required Courses

Complete the following required course:

- HIST 6013 - Introduction to the Professional Study of History

Complete **one** of the following:

- HIST 6931 - Readings: Special Subjects in History
- HIST 6989 - Seminar: Special Subjects in History

Complete **two** of the following approved elective courses:

- HIST 5027 - Enlightenment and Revolution
- HIST 5028 - Nations and Classes: 19th Century Europe
- HIST 5029 - Age of Anxiety in Europe
- HIST 5030 - Europe During the World Wars
- HIST 5031 - Contemporary Europe
- HIST 5032 - Globalization in World History Since 1945
- HIST 5035 - Crisis and Transformation: Europe's 20th Century
- HIST 5046 - Victorians and Victorianism
- HIST 5051 - Britain and The Empire
- HIST 5055 - The Atlantic Slave Trade: Africa, Caribbean and U.S.
- HIST 5062 - Modern France: 1789 to the Present
- HIST 5071 - Modern Germany
- HIST 5074 - Post-War Germany
- HIST 5075 - Travel Stories and Origins of Cultural Anthropology
- HIST 5076 - History of Modern Science
- HIST 5083 - Russia Since 1917
- HIST 5260 - Digital Studies and Strategies
- HIST 5303 - Sex and Gender in Modern Britain
- HIST 5347 - History of Biology
- HIST 5348 - Mind and Malady: A History of Mental Illness
- HIST 5411 - Modern Mexico
- HIST 5412 - Mexico and the United States: People and Politics on the Border
- HIST 5414 - Nationalism and State Building in Latin America, 1750-1850
- HIST 5415 - Social Revolutions in Latin America
- HIST 5417 - Commodities and Globalization

- HIST 5420 - Traditional China: China to 1600
- HIST 5421 - Modern China
- HIST 5422 - Living through Mao's China: Life, Mat. Cult, Movies, 1949-76
- HIST 5431 - Modern Japan
- HIST 5451 - Southern Africa
- HIST 5455 - African Struggle for Independence
- HIST 5461 - The Modern Middle East
- HIST 5462 - Islam in Modern History
- HIST 5471 - The Second World War
- HIST 5472 - The 1950s: Korean War, the Cold War and Social Transformation
- HIST 5475 - The Vietnam War
- HIST 5490 - Weapons of Mass Destruction
- HIST 5621 - Explorers and Exploration
- HIST 5622 - Oceans In History

# Graduate Certificate in Mathematical Content Knowledge for Teaching

## Graduate Certificate in Mathematical Content Knowledge for Teaching

This certificate program is focused, first and foremost, on augmenting practicing teachers' mathematical content knowledge for teaching. Each course is organized to fit teachers at all K-12 school grade levels, including mathematics and special education teachers. Major themes for each course are informed by national and state standards, particularly the new Colorado Common Core Standards. Each course will engage the participating teachers in exploring and expanding their own comprehension of the topics while examining and increasing their understanding of how students develop such knowledge.

### Required Courses

Each course stands alone; you may want to take one class or all three. Courses may be taken in any order.

- MTED 5621 - A World of (Different) Numbers: Quantity and Operation
- MTED 5622 - Expanding Conceptions of Algebra
- MTED 5623 - Geometrical Ways Of Reasoning

Certificate format is online.



# Graduate Certificate: Geographic Information Systems and Geomatics

The graduate certificate in geographic information systems (GIS) is designed to supplement knowledge needed in the professional work environment or as a way to see if a graduate degree in GIS is a good fit. Students may earn this certificate without formal admission to a master's degree program in engineering if they take these classes as a non-degree student.

## Curriculum

The GIS graduate certificate requires the successful completion of four core GIS classes with a grade of B- or better; any prerequisites for those individual classes are also required.

- CVEN 5391 - Introduction to Geomatics
- CVEN 5392 - Unmanned Aerial Systems
- CVEN 5395 - GPS/GNSS
- CVEN 5381 - Introduction to Geographic Information Systems
- CVEN 5382 - Geospatial Data Development
- CVEN 5385 - GIS Relational Database Systems
- CVEN 5386 - GIS Laboratory
- CVEN 5387 - Advanced Remote Sensing
- CVEN 5390 - Interactive Web Mapping GIS

For more information contact the Department of Civil Engineering at  
civilengineering@ucdenver.edu  
303-315-7160

# Health Economics and Outcomes Research Graduate Certificate

Graduate Certificate in Health Economics & Outcomes Research is designed to train scientists to engage in modern economic research related to questions pertinent to health policy, health behaviors, and health care services. The unique analytic skill set delivered in this certificate is sought out health care agencies, state agencies, and consulting firms in the Denver area that are looking for employees who know how to use health data to answer research questions. Upon earning this certificate, students will:

1. Have sufficient knowledge of econometric theory and techniques to make them an effective consumer and producer of empirical research in health economics.

2. Understand the challenges in identifying causal relationships using health data.
3. Understand the fundamentals of the potential outcomes framework, randomized experiments, natural experiments, panel data models, matching, instrumental variables and regression discontinuity designs.
4. Understand the economic approach to studying the healthcare sector, health behaviors, and health outcomes.
5. Understand how different markets function in the health care sector, such as the market for health care, health insurance, health labor (such as physicians and nursing), and pharmaceuticals.

These certificate requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their certificate advisor and CLAS advisor to confirm the best plans of study before finalizing them.

## **Program Delivery**

This is an on-campus program.

## **General Requirements**

[Click here for information about Academic Policies.](#)

## **Admission Requirements**

- Degree: BA/BS
- A minimum GPA of 3.00 is recommended

## **Application Process**

Applicants for a Graduate Certificate Program will send the following documents to the Certificate Program Director:

- Graduate Certificate Application Form
- Official Transcripts
- Resume
- Letter of interest

Upon approval of the student's admission by the Graduate Certificate Program, the program director will send the student's certificate admission file to the Graduate School. The Graduate School will confirm the applicant's credentials, will determine whether the student meets the

general academic requirements of the Graduate School, will admit the student and inform the student of his/her admission to the Graduate Certificate Program.

### **Additional Requirements**

- Students may be enrolled as a CU Denver graduate student in any discipline, or as a CU Denver non-degree seeking student with a bachelor's degree.
- Have completed Introduction to Econometrics (ECON 4811), or equivalent coursework, or have professional experience in statistical analysis.
- International students must submit TOEFL scores or otherwise satisfy the University's English Language Proficiency requirement.

### **Certificate Requirements**

1. Students must complete a minimum of 12 ECON credit hours.
2. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
3. All credit hours for the certificate must be earned at the University of Colorado Denver.

### **Certificate Restrictions, Allowances and Recommendations**

1. Students have 7 years to complete this certificate.
2. Students should evaluate course descriptions to determine if the prerequisites or corequisites have been completed in order to move forward in the certificate.
3. No course may be taken more than twice.
4. Graduate level ECON credit counted towards the Graduate Certificate in Health Economics & Outcomes Research may be subsequently counted towards a CU Denver graduate degree in Economics. Certificate students are not guaranteed admission to the M.S. program in Health Economics. However, certificate students can apply to the M.S. program in economics at any time.
5. Students who complete the Graduate Certificate in Health Economics & Outcomes Research and later apply to the M.S. program in Health Economics at CU Denver may submit their certificate in place of GRE scores and letters of recommendation.
6. Students admitted to the M.A., M.S., or Ph.D. programs in economics at CU Denver may complete the graduate certificate concurrently with their degree program. However, courses that have already been counted towards any degree already awarded (undergraduate or graduate) may not be counted towards the certificate retroactively.

## Required Courses

Complete **all** the following ECON courses:

- ECON 5030 - Data Analysis with SAS
- ECON 4812-Advanced Econometric Methods or ECON 5823 - Econometrics II
- ECON 7661 - Health Economics I
- ECON 7662 - Health Economics II

**Total: 12 Credit Hours**

# Historic Preservation Graduate Certificate

## Graduate Certificate in Historic Preservation

The University of Colorado Denver Graduate Certificate in Historic Preservation is an interdisciplinary collaboration between the College of Architecture and Planning and the History Department. The certificate program is open to any qualified graduate student or non-degree seeking student with a bachelor's degree.

The certificate provides CU Denver students and the wider community with foundational knowledge and skills in Historic Preservation, a field that enhances studies and professional work in areas such as architecture, heritage tourism, historic preservation, national park interpretation, planning, public history, urban studies and related fields.

The certificate can stand on its own, can complement a graduate program in Architecture, History, or Urban Planning; or can serve as a beginning to graduate studies. It can also be a stepping stone to further work in Historic Preservation with the College of Architecture and Planning's Masters of Science in Historic Preservation.

**Applicants must have a B.A. or B.S. degree.**

Interested students must register their intent to complete the certificate with the Director of the Public History & Preservation Program, CU Denver History Department. Students already enrolled in a graduate program at CU Denver can begin their certificate work at any point during their studies. Non-degree students must apply to the university as a non-degree seeking student.

Those students already admitted to a degree program in the College of Architecture and Planning should begin the process by contacting program co-director, Professor Christopher Koziol (Christopher.koziol@ucdenver.edu). All others should contact the Department of History

Director of the Public History & Preservation Program, Professors Tom Noel (tom.noel@ucdenver.edu) and Peter Kopp (peter.kopp@ucdenver.edu).

All courses in the certificate program must be taken in residency with CU Denver faculty. Students must maintain a 3.0 GPA, and no course below B- will count towards the certificate.

Graduate students in the History Department can count courses for both their major or minor fields and the requirements for the certificate. Graduate students in the College of Architecture and Planning should discuss credit distributions with their academic advisor.

## Admissions Requirements

1. Applicant must have a B.A. or B.S. Degree.
2. Applicant applies to the above designated co-director.
3. Applicants must provide a transcript, statement of purpose, and two letters of recommendation.

## Program Requirements

1. Students must complete a minimum of 18 credits from approved courses.
2. Students must complete all courses at the graduate (500 and above) level.
3. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All credits for the certificate must be completed with CU Denver faculty.

## Required Courses

Complete **two** of the following courses:

- HIST 5232 - Historic Preservation     **OR**
- HIST 6989 - Seminar: Special Subjects in History

*One of these courses is offered once a year by the History Department.*

- HIPR 6010 - Preservation Theory and Practice

*This course is offered every fall by the College of Architecture and Planning.*

**Total 6 credits**

## **Electives**

These remaining 12 credit hours should be distributed so that at least 3 hours are from each of the two participating colleges, CLAS(HIST) and CAP(ARCH and HIPR), and hence, no more than 9 hours from the other. Be sure to consult your preservation advisor (Profs. Koziol or Noel) on your course selection.

- HIST 5228 - Western Art and Architecture
- HIST 5229 - Colorado Historic Places
- HIST 5240 - National Parks History
- HIST 5245 - Heritage Tourism
- HIST 5939 - Internship
- OR
- HIPR 6930 - Internship
- HIST 6950 - Master's Thesis
- OR
- HIST 6952 - Master's Project: Public History
- HIPR 6110 - Regionalisms & the Vernacular
- HIPR 6210 - Historic Buildings in Context
- HIPR 6220 - Adaptive Reuse: Business and Practice
- HIPR 6310 - Documentation, Analysis, Representation
- HIPR 6410 - Urban Conservation: Context for Reuse
- HIPR 6510 - Building Conservation
- HIPR 6610 - Reading the City
- ARCH 6210 - History of American Architecture
- ARCH 6212 - History of Modern Architecture

# **Integrated Construction, Management + Leadership Graduate Certificate**

## **Contact:**

**Business School:** Linda Brooker  
303.315.8200  
linda.brooker@ucdenver.edu

## **College of Engineering, Design and Computing | Civil Engineering:**

303.315.7160

civilengineering@ucdenver.edu

## **College of Architecture and Planning:** Leo Darnell

303-315-1015

leonard.darnell@ucdenver.edu

The colleges of Architecture and Planning, Engineering, Design and Computing, and the Business School at the University of Colorado Denver have formed a partnership to create an innovative and interdisciplinary leadership program. The Integrated Construction, Management and Leadership (ICML) Certificate is a four-course certificate designed to launch designers, architects, engineers, and business entrepreneurs into the world of construction or rapidly update an existing skill-set.

All classes are held in the Liniger Building at CU South Denver, located east of Interstate 25 on Lincoln Avenue in Parker, Colorado. Go to the CU South Denver website to see the class schedule.

As disciplinary identities, project boundaries, and conventional markets blur, leadership, management skills, and civic mindfulness are key aspects to successfully navigating a rapidly transforming 21st century built environment. Many new ideas are emerging involving how projects are conceived and delivered that better integrate the complex relationships among finance, marketing, design, and construction. These new interdisciplinary management and construction techniques streamline the construction of increasingly large-scale and complex projects. Leadership skills are necessary for success in the central activities of contemporary engineering, architectural design firms, business, government, and non-profits. The demands of project management in firms today involve more than specific technical expertise in a given field. Firms need creative individuals who can effectively innovate, execute, and communicate across disciplines. This new certificate program capitalizes on these changes and the new opportunities they present.

ICML is an interdisciplinary program designed for working or aspiring professionals, and upper-level students interested in expanding their knowledge base in the fields of engineering, architecture, business, and their intersections. The courses include introductions to and explorations of current trends in the construction industry, project management and building information modeling (BIM). The final course is an integrated course that brings together top executives in the architecture, engineering and construction (AEC) business to discuss current industry topics and provides students an opportunity to apply principles from the various fields to case study projects.

- Students can earn graduate-level credit for each course they successfully complete and the ICML Certificate upon completion of all four courses.
- They can take the courses as a non-degree student or while enrolled in a degree program at the University of Colorado Denver.

- The courses can be used to partially fulfill requirements for the MEng in Construction Engineering and Management or other eligible graduate programs such as the Master of Architecture degree upon acceptance into these programs.
- Approved courses in this Certificate may also count toward related Certificates offered by the Business School and Construction Engineering and Management.

## Certificate Requirements

- ARCH 6420 - Integrated Practice & BIM Technology
- BANA 6650 - Project Management
- CEMT 6235 - Advanced Construction Engineering
- ARCH 6413 - Construction Leadership

## 12 Hours

# Interpersonal Violence and Health Care, Graduate Certificate

## Introduction

The Certificate in Interpersonal Violence and Health Care (CIVHC) fulfills a nationally recognized need to educate and train individuals from a broad range of health disciplines to effectively respond to victims of interpersonal violence. CIVHC is a program of the Center on Domestic Violence in CU Denver's School of Public Affairs, developed in collaboration with local and national advisors representing schools of nursing, medicine and dentistry, as well as knowledgeable health practitioners skilled in meeting the needs of patients experiencing interpersonal violence. CIVHC is the first graduate-level program of its kind. As a distance learning program, it represents a collaboration within the University of Colorado system-the Downtown Campus, the Anschutz Medical Campus and the Colorado Springs Campus. Its goal is to provide education for health professionals, faculty and students, thereby building proficiency and confidence in interpersonal violence prevention, identification and intervention in Colorado and the nation.

### **At the completion of this certificate program, participants will have:**

- Leadership skills necessary to improve systematic responses to interpersonal violence in health care settings
- Thorough understanding of the health ramifications of interpersonal violence
- Skill and comfort with screening all patients for interpersonal violence-victims, offenders and child witnesses



- Ability to effectively assess and treat adults and children engaged in violent relationships
- Ability to build resources to meet the needs of patients including, but not limited to, collaboration with community-based providers.

Four courses are required for completion of this certificate. Please contact the Director of the Center on Domestic Violence at [barb.paradiso@ucdenver.edu](mailto:barb.paradiso@ucdenver.edu) for more information.

# Labor Leadership Certificate

## Introduction

Please click [here](#) to see Political Science department information.

The Labor Leadership certificate is meant to develop the next generation of leaders in labor unions and civic organizations focused on labor and related issues of race, class and gender equity. The certificate is particularly relevant to labor union leaders, rank and file members, and community-based organizational staff who desire to receive continuing education regarding labor leadership. The labor leadership certificate will combine academic instruction with field learning and community-based research projects. The program features active partnerships with local labor organizations, such as unions and community-based groups focused on relevant labor, class and race issues (such as immigrant rights groups, workplace gender equity groups, etc.). Certificate students will join a diverse group of graduate students pursuing their full Master's degree in the Department's community leadership program (including students focused on governmental/public leadership, and students focused on non-profit leadership) which will enhance synergetic learning in the classroom, and enlarge networking opportunities among all students.

The certificate is open to non-degree seeking as well as students formally admitted to the MA in Political Science program. The Certificate can be earned as a stand-alone University certificate, or it can be applied to a current or future degree program. Non-degree seeking students who successfully complete the certificate program would be allowed to transfer in the credits received in the certificate program to complete the Master's Degree in Political Science.

The certificate can be earned either through our traditional on-campus graduate seminars, or entirely through classes offered in a weekend-intensive format in our New Directions graduate program. Students may take classes in either format desired.

## Admissions and Declaring this Certificate

Any current or potential student wishing to declare this certificate should schedule a certificate advising appointment with either the Director of the New Directions graduate program (Dr. Minsun Ji) or with the Director of the On-campus Graduate Program (Dr.

Michael Berry), in order to register their intent to pursue the Labor Leadership Certificate and to develop a curriculum plan.

## **Grade Requirements**

Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.

## **Curriculum and Credit Requirements**

The graduate certificate requires five Labor Leadership courses (15 credits)

### **Required Labor Leadership Courses**

Take **all** of the following courses

- PSCI 5535 - Labor and Working Class Politics
- PSCI 5548 - Labor Law and Collective Bargaining
- PSCI 5550 - Labor, Trade Unions and the Global Economy

### **Elective Labor Leadership Courses**

Take **two** of the following courses

- PSCI 5326 - Advanced International Political Economy: Globalization
- PSCI 5424 - The Social Economy and Sustainable Development
- PSCI 5434 - The Cooperative Movement: Politics and Policy
- PSCI 5914 - Community Organizing and Community Development

## **Literacy and Language Development for Diverse Learners Certificate**

This online graduate certificate program offers K-12 teachers greater background in the development, assessment and instruction of literacy for diverse learners, including children and youth who speak dialects of English or are English language learners. This certificate was developed in response to public school districts' need to improve reading and writing achievement for diverse students. Teachers in K-12 grades, including content area teachers and

those teaching special reading classes, as well as administrators have also found this program to help them best meet the needs of struggling learners.

### **Certificate Structure**

The fully online certificate totals 12 credit hours and consists of four graduate courses, each 3 credits. The certificate may be completed in four semesters. Students can begin in any term.

### **Courses**

- LCRT 5810 - Oral & Written Language & Literacy
- LCRT 5770 - Effective Literacy Instruction for Diverse Learners
- LCRT 5055 - Literacy Assessment & Informed Instruction
- LCRT 5150 - Culturally Relevant & Responsive Pedagogies

# **Local Government, Graduate Certificate**

## **Introduction**

Local government is the most rapidly growing area of the public sector employment across the country, providing jobs in municipalities, counties, regional authorities, and councils of government.

The graduate certificate in Local Government allows students to become well-versed in the forces that shape the agendas of these offices and agencies and gain an understanding of government management and policy making.

In addition to the stand-alone graduate certificate, students may also choose to complete a concentration in Local Government as part of the Public Administration, MPA . Students interested in the Local Government concentration must apply and enroll in the MPA program within the School of Public Affairs (SPA) and must adhere to all master degree program requirements.

For more information, please the School of Public Affairs website.

## **Program Delivery**

- Courses are offered on campus, online, and in hybrid formats.

## **Program Requirements**

- Students must successfully complete 12 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.

Students must complete the following required course:

- PUAD 5503 - Public Budgeting and Finance

**One** core course from the list below:

- PUAD 5625 - Local Government Management
- PUAD 5626 - Local Government Politics and Policy
- PUAD 5628 - Social Problems and Policies

Students must complete **two** elective courses from the list below or select unlisted courses that have been approved in-advance by the concentration director:

- PUAD 5130 - Collaboration Across Sectors
- PUAD 5170 - Strategic Management for Nonprofit and Public Managers
- PUAD 5220 - Human Resource Management
- PUAD 5250 - Intergovernmental Management
- PUAD 5260 - Managing Diversity
- PUAD 5271 - Managing Conflict and Change
- PUAD 5380 - Citizen Participation: Theory and Practice
- PUAD 5410 - Administrative Law
- PUAD 5440 - Negotiation and Conflict Resolution
- PUAD 5460 - Political Advocacy
- PUAD 5502 - Public Financial Management and Policy
- PUAD 5632 - Seminar in Environmental Management
- PUAD 5650 - Public Service in Emergency Management and Homeland Security

# Nonprofit Management, Graduate Certificate

## Introduction

The graduate certificate in Nonprofit Management prepares students to become innovative and critical thinkers in the areas of nonprofit organizational management and public policy, with a unique approach that bridges theoretical knowledge with real-world experience. As students prepare for their careers or advancement in their current positions, they gain insight into the interdependence between the nonprofit, public, and for-profit sectors. Graduates are able to span the boundaries of these three sectors to assess community needs, navigate the realm of public policy, and strategically and effectively manage organizations that ultimately benefit society.

In addition to the stand-alone graduate certificate, students may also choose to complete a concentration in Nonprofit Management as part of the Criminal Justice, MCJ or the Public Administration, MPA. Students interested in the concentration must apply and enroll in the MCJ or MPA program within the School of Public Affairs (SPA) and must adhere to all master degree program requirements.

SPA's affiliation with the Nonprofit Leadership Alliance gives students the opportunity to earn the Certified Nonprofit Professional (CNP) credential through completion of the Nonprofit Management concentration [or certificate] coursework, additional required extracurricular activities, and an examination. Contact [cnp@ucdenver.edu](mailto:cnp@ucdenver.edu) for more information about this credential.

For more information, please see the School of Public Affairs website.

## Program Delivery

- Courses are offered on campus, online, and in hybrid formats.

## Program Requirements

- Students must successfully complete 12 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.

Students must complete the following required course:

- CRJU 5010 - Seminar Nonprofit Management

Students must complete **three** elective courses from the list below or select unlisted courses that have been approved in-advance by the concentration director:

- PUAD 5115 - Effective Grant Writing for Nonprofit and Public Sector Managers
- PUAD 5120 - Nonprofits and Public Policy
- PUAD 5125 - Civil Society and Nongovernmental Organizations
- PUAD 5140 - Nonprofit Financial Management
- PUAD 5150 - Fundraising & Financial Resource Development
- PUAD 5160 - Nonprofit Boards and Executive Leadership
- PUAD 5170 - Strategic Management for Nonprofit and Public Managers
- PUAD 5180 - Social Entrepreneurship

## Post-Graduate Certificates

The Business School's post-graduate certificates are primarily intended for professionals in the community with a master's degree, in any business discipline, from an AACSB accredited institution. These certificates are offered in a variety of specialized business areas from Business Analytics to Information Systems. The courses are designed to allow individuals that are already in the business community to bring their skills up to date - or to explore a new area of business that interests them.

Students are required to complete four graduate courses in order to receive a post-graduate certificate. Students can pursue one of our post-graduate certificates, even if they are not CU Denver students. Credit earned as a part of the certificate DOES count towards a second graduate business degree, should you choose to expand your knowledge further with one of our complete MS or MBA degrees.

## **We currently offer post-graduate certificates in:**

- Bioinnovation and Entrepreneurship
- Business Intelligence
- Business Strategy
- Change Management
- Commodities
- Digital Health Entrepreneurship
- Enterprise Risk Management
- Enterprise Technology Management
- Entrepreneurship
- Finance
- Health Information Technology
- Human Resources Management
- Information Systems
- International Business
- Leadership
- Managing for Sustainability
- Marketing
- Risk Management and Insurance
- Sports and Entertainment Management
- Technology Innovation and Entrepreneurship
- Web and Mobile Computing

Some of the post-graduate certificates require prior knowledge in the area being studied, Please contact an advisor for specific courses and requirements for the post-graduate certificates.

# Public Policy Analysis, Graduate Certificate

## Introduction

The graduate certificate in Public Policy Analysis offered by the School of Public Affairs provides an understanding of the context in which public policies are formulated, implemented, and evaluated. Graduates will have training in the tools and skills needed to assess the impact of public policies and programs, including policy analysis, cost-benefit analysis, program evaluation, multivariate regression, and other analytical techniques.

## Program Delivery

- Courses are offered on campus, online, and in hybrid formats.

## Program Requirements

- Students must successfully complete 15 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.

Students must complete the following core courses:

- PUAD 5004 - Economics and Public Finance
- PUAD 5005 - The Policy Process and Democracy
- PUAD 5320 - Public Policy Analysis

Students must complete **two** additional elective courses from the list below or select unlisted courses that have approved in advance by the program director:

- PUAD 5200 - Education Policy
- PUAD 5310 - Policy Formulation & Implementation
- PUAD 5330 - Intermediate Statistical Analysis
- PUAD 5350 - Program Evaluation
- PUAD 5631 - Seminar in Environmental Politics and Policy
- PUAD 5720 - Public Policies for Hazards and Disasters

# Public, Nonprofit and Community Leadership Graduate Certificate

## Introduction

Please click [here](#) to see Political Science department information.

The Public, Non-Profit and Community Leadership Graduate Certificate is offered in two different formats: the traditional, on-campus format, and the New Directions weekend classes format, with classes offered in CU Denver facilities south of Denver (currently at the Liniger Building in Parker). Students can choose classes in either of these two formats to complete the certificate.

The CU Denver Political Science Department's Public, Non-Profit and Community Leadership Certificate engages students in a focused curriculum in the local public leadership, and in the community organizing and development field, including field placements in internships with local community partners. The certificate is tailored to meet the needs of individuals in public and non-profit positions that require development of their leadership competencies and for individuals in informal community leadership positions who want to build their knowledge, skills, and effectiveness.

The program curriculum is anchored around the study and practice of local civic engagement, especially in traditionally marginalized communities. Students will be connected to meaningful work and networking opportunities in local government or in community settings, through community-based coursework, professional internships and service-learning opportunities. The certificate program provides critical education and effective skills-based training for students seeking careers in local government, in non-profit organizations, or in community organizing and development work. Students will be prepared to become change agents in their communities, while developing possible career paths in community-based advocacy/service organizations, public agencies, or international development work.

The certificate is open to non-degree seeking students (with or without an undergraduate degree) as well as students formally admitted to the MA in Political Science and to upper division undergraduates seeking to get a head start on their graduate studies. The Certificate can be earned as a stand-alone University certificate, or it can be applied to a current or future degree program. Non-degree seeking students who successfully complete the certificate program would be allowed to transfer in the credits received in the certificate program to complete the Master's Degree in Political Science.

The certificate can be earned either through our traditional on-campus graduate seminars, or entirely through classes offered in a weekend-intensive format in our New Directions graduate program. Students may take classes in either format desired.

## Admissions and Declaring This Certificate

Any current or potential student wishing to declare this certificate should schedule a certificate advising appointment with either the Director of the New Directions graduate program (Dr. Minsun Ji) or with the Director of the On-campus Graduate Program (Dr.



Michael Berry), in order to register their intent to pursue the Community Leadership Certificate and to develop a curriculum plan.

## Grade Requirements

Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.

## Curriculum and Credit Requirements

The graduate certificate requires four "public and community leadership" courses (12 credits), which must include PSCI 5914 - Community Development and an appropriate field study course (most usually an internship with a local government jurisdiction or community based organization).

### Required Public and Community Leadership Courses

- PSCI 5914 - Community Organizing and Community Development  
Field Placement Requirement, fulfilled by **one** of the following courses
- PSCI 5939 - Internship
- PSCI 5944 - CU in the City

### Elective Public and Community Leadership Courses (6 credits)

- PSCI 5840 - Independent Study: PSCI (when relevant and approved by Program Advisor)
- PSCI 5548 - Labor Law and Collective Bargaining
- PSCI 5555 - International Women's Resistance
- PSCI 5414 - Non-Profits and Social Change
- PSCI 5424 - The Social Economy and Sustainable Development
- PSCI 5434 - The Cooperative Movement: Politics and Policy
- PSCI 5265 - Social Justice And Globalization
- PSCI 5274 - Conflict Resolution and Public Consent Building
- PSCI 5094 - Seminar: Urban Politics
- PSCI 5206 - Social Movements, Democracy and Global Politics
- PSCI 5024 - State Politics: Focus on Colorado
- PSCI 5025 - Local Governance and Globalization

- PSCI 5075 - Gentrification and Social Equity
- PSCI 5084 - Local Government and Administration
- PSCI 5008 - Graduate Topics in Political Science (when relevant and approved by Program Advisor)

Public Leadership Course credits may also be earned through study abroad in the Semester in Berlin program or the Development in East Africa program.

## **Risk Management and Insurance Certificate**

The Business Schools undergraduate certificates are primarily intended for students currently pursuing a degree in any undergraduate discipline that want to expand their business knowledge to give themselves a leg up when they enter the workforce. However, they can also be taken by students with only a high school diploma.

Students can pursue one of our undergraduate certificates, even if they are not CU Denver students. Credit earned as a part of the certificate DOES count towards your undergraduate degree, should you choose to pursue a degree here. One such certificate is our Risk Management and Insurance Certificate. Information for that certificate is below:

Broaden your knowledge of Risk Management and Insurance (RMI) by completing a one-year Certificate in RMI Studies from the University of Colorado Denver. By completing three semester-long RMI courses, all available online, and meeting prior finance course requirements, you will be on your way to enhancing your personal knowledge and providing your employer with RMI awareness and professional skills. See the Risk Management and Insurance Certificate page for more information.

## **Scientific Foundations of Technical Innovation Certificate**

The goal of this certificate is to give students and working professionals an opportunity to broaden their technical knowledge while contributing to regional economic development. Two real-world projects—one for a client and one for the student's own pursuits—are combined with a series of six short courses to provide both context and substance for gaining the knowledge needed to create technical prototypes. The model is based on the method by which most physical science graduate students learn technical domains on a "just-in-time" basis. It is also a method by which many corporations quickly bring new project team members up to speed on project knowledge. Entry into the certificate program requires prior completion of two

semesters of calculus-based physics and two semesters of calculus **or** permission of the certificate advisor.

## Program Requirements

1. Students must complete a minimum of 12 credit hours from approved coursework.
2. Students must complete all credits for the certificate at the graduate (5000 or above) level.
3. Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA.
4. Students must complete all credits for the certificate with CU Denver faculty.

Graduate versions of the courses (5000-level) require an undergraduate degree and additional work on technical analysis or connection to professional practice.

Complete **all** of the following courses:

- PHYS 5850 - Physics for Design and Innovation I
- PHYS 5400 - Scientific Instrumentation
  - Choose six 1-semester-hour short courses out of a larger list of offered topics; the specific sequence must be approved by the certificate advisor.
- PHYS 5852 - Physics for Design and Innovation II

**Total: 12 Hours**

# Software Engineering Graduate Certificate

## Graduate Certificate in Software Engineering

This certificate is designed for working professionals, or computer science students beginning careers, in the fields of software engineering and software development. This certificate requires a previous computer science or systems engineering degree. At the start of the certificate program students are expected to have a strong understanding of software development in terms of software construction, software coding and basic software design.

## Certificate Objectives

- To provide working or career-oriented students with knowledge and practice of the applied skills needed to become successful software engineers.
- To provide working or career-oriented students with knowledge and understanding of the skills needed to successfully advance their careers as software engineers.

## Process to Attain Certificate Objectives

Students will complete a sequence of three separate graduate-level courses

- Software Architecture (CSCI 5010)
- One of the following:
  - Operating Systems (CSCI 5573) or
  - Advanced Computer Architecture (CSCI 5593)
- Software Project Management Support (CSCI 5011); Prerequisites: CSCI 5010 plus either CSCI 5573 Operating Systems or CSCI 5593 Advanced Computer Architecture

Students must take and pass each course to obtain the Software Engineering Certificate.

## Course objectives

### Software Architecture

This course will focus on two major areas. The first part of the course will cover Software Requirements Analysis and Development as well as Software Architecture and the Soft Skills needed by high level Software Architects. The second part of the course will cover how Persistent Data fits into different types of Software Systems. The primary focus of the second part of the course will be on incorporating larger scale Enterprise Data Systems into Software Systems and will be an application of the first part of the course material. This course will explore:

- Chronic Software Production Problems
- Derived Functional and Non-Functional Requirements
- Problem and Solution Space mapping and complexity
- Architecture (the product) and Architecting (the practice)
- Object and Component based Software Architecture techniques
- Architectural Styles and how to apply them
- Architectural Views and their relationship to Requirements
- Application Data Systems vs. Enterprise Data Systems
- The different Quality Attribute requirements between Application and Enterprise Data Systems
- Software Architectures for Enterprise Data Systems

- Architecting Domain Models for Data Systems

## **Software Project Management Support**

This course will cover Software Planning, Estimation, Staffing and Scheduling. This course will explore:

- Software Work Breakdown Structures
- Software Project Dependencies and Effort Schedules
- Estimation Techniques
- Comparisons between different Project Models (Waterfall, Agile, Iterative, ...) and when one might be preferred over the others

## **Operating Systems**

This course provides an in-depth study of the principles of computer operating systems and their essential components. Team projects expose students to a variety of system design issues as they relate to the functionality and performance of the system. Topics include I/O devices, Disk Scheduling, File System Organizations, Directory Systems, Sequential and Concurrent process, CPU Scheduling, Memory Management, Deadlock, Process and Threading, and review of some related articles in the literature.

## **Advanced Computer Architecture**

This course covers concepts in the structural design of computer systems important to software designers. Topics include memory hierarchy, superpipelining and superscalar techniques, dynamic execution, vector computers and multiprocessors and performance impacts of software design.

# **Strategic Communication Graduate Certificate**

► Graduate School Policies and Procedures apply to this program.

Strategic Communication has been defined as the management function that entails planning, research, publicity, promotion and collaborative decision-making to help any organization's ability to listen to, appreciate and respond appropriately to those persons and groups whose mutually beneficial relationships the organization needs to foster as it strives to achieve its mission and vision. The Graduate Certificate in Strategic Communication is designed to provide

students with the principles and theories that guide the work of public relations practitioners in commercial, public and nonprofit contexts.

Non-degree students who enroll in the MA program following completion of the certificate may transfer up to 12 hours of credits earned for the certificate into credits for the MA degree. The certificate also is designed for students enrolled in a CU Denver's master's program, including the Department of Communication's MA program. For such students, the certificate can be completed as part of or in addition to the coursework required for the master's degree.

Recipients of the Undergraduate Certificate in Strategic Communication are ineligible to complete this certificate.

## **Application Procedures and Additional Information**

Students should apply for the Graduate Certificate in Strategic Communication before or after the completion of the required courses. To apply, students must complete the certificate application, attach it to an unofficial transcript, and return it to Dr. Hamilton Bean in room 3010 of the Student Commons Building, or mail to Department of Communication; P. O. Box 173364, Campus Box 176; University of Colorado Denver; Denver, CO 80217-3364. The approved certificate is posted to the transcript and mailed to the student after final grades are posted for the semester.

Students who are not already enrolled at CU Denver must also complete an online Application for Non-Degree Admission prior to registering for courses.

Additional information about the Graduate Certificate in Strategic Communication may be obtained from Dr. Hamilton Bean, Department of Communication, Student Commons Building, 1201 Larimer Street, Suite 3010, 303-315-1909, [Hamilton.Bean@ucdenver.edu](mailto:Hamilton.Bean@ucdenver.edu).

## **Certificate Requirements**

1. Students must complete a minimum of 12 credits from approved courses.
2. Students must complete all courses at the graduate level (5000 or above) to fulfill the requirements of the certificate.
3. Students must earn a minimum grade of B (3.0) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All of the credit hours for the certificate must be earned from faculty at the University of Colorado Denver.

Complete the following courses:

- COMM 5051 - Advanced Strategic Communication
- COMM 5240 - Organizational Communication

- COMM 5939 - Internship
- An elective at the graduate level from the College of Arts & Media, School of Business, the School of Public Affairs, or the Anschutz Medical Campus. The elective must be approved in consultation with the Department of Communication.  
Students may be permitted to take courses other than those listed above to fulfill the requirements for the certificate if those courses fit their professional goals better. Requests for approval for substitute courses, including an explanation for the substitution, must be made in writing to Dr. Hamilton Bean.

## Sustainability Certificate

The Business Schools graduate certificates are primarily intended to give individuals with an undergraduate degree in any discipline access to business courses that can help them succeed in their current job or even help them launch their own company.

Students can pursue one of our graduate certificates, even if they are not CU Denver students, without taking the GMAT. Credit earned as a part of the certificate DOES count towards your graduate business degree, should you choose to pursue a degree here. Listed below is information on one such certificate.

The Managing for Sustainability Certificate is designed for business professionals seeking a deeper understanding of sustainability and/or the technical knowledge to lead sustainability initiatives in their companies. To earn a Managing for Sustainability Certificate, students complete four semester-long graduate Business School courses. Two of the courses provide a foundation in sustainable business practices then, students select their remaining two certificate classes covering such specialized areas as finance, marketing, accounting, and social entrepreneurship. See the Managing for Sustainability Certificate page for more information.

## Sustainable Urban Agriculture Graduate Certificate

**Certificate Advisor:** Amanda Weaver  
**E-mail:** amanda.weaver@ucdenver.edu

### Introduction

Please click [here](#) to see Geography and Environmental Sciences Department information.

The goal of the certificate program is to provide GES students advanced training in sustainable urban agriculture through the integration of university classroom study and field-based

practicum conducted at the department's field research station. Requirements for the certificate are therefore divided between on-campus courses and field courses.

Upon successful completion of the certificate, students will:

- Have knowledge of the history of urban farming
- Understand the modern agro-food system
- Participate in sustainable urban agricultural practices

## **Program Delivery**

This is both an on-campus and field-based program.

## **Declaring This Certificate**

- Please see the Certificate advisor.

## **General Requirements**

- [Click here for information about Academic Policies.](#)

## **Eligibility**

Sustainable Urban Agriculture has broad applications across many disciplines. Students who already hold a bachelor's degree from CU Denver or other institutions in any major may be admitted as a CU Denver graduate student or a non-degree-seeking student, depending on enrollment status.

## **Current CU Denver Students**

A student may begin the program in any semester or during the summer by making arrangements with the Certificate advisor. This should be done as soon as you have decided to pursue the certificate, and no later than the semester previous to completion of all the courses required to obtain the certificate.

## **Former CU Denver Students or Graduates of Other Universities**

In order to start the certificate program, you will need to apply to the university as a non-degree seeking student if you are not already enrolled in a graduate program within CU Denver. Once accepted, you will be able to enroll in all of the appropriate classes.



*Admissions:* <http://www.ucdenver.edu/admissions/non-degree/Pages/default.aspx>.

Specific questions about enrollment or tuition should be addressed directly to the University Registrar's Office or Bursar's Office.

## **PERFORMANCE EXPECTATIONS**

For graduate and non-degree seeking students, the certificate will be awarded upon completion of the program and be added to the student's transcript.

## **Certificate Requirements**

1. Students must complete a minimum of 12 hours taken from the approved courses below.
2. Students must complete all courses at the graduate level (5000 or above) to fulfill the requirements of the certificate.
3. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All 12 credit hours for the certificate must be earned at the University of Colorado Denver.

## **Program Restrictions, Allowances and Recommendations**

1. Because a certificate is a CU Denver certification of a students' specialized knowledge in an advanced subject matter, all courses in a certificate program are expected to be taken in residency at CU Denver.
2. Any changes to the standard curriculum program must be approved in writing by the certificate advisor.
3. Courses taken within the Sustainable Urban Agriculture Certificate Program may be used towards one other degree requirement.
4. Please pay close attention to prerequisites for specific courses.

Take **all** of the following courses (9 credit hours):

- ENVS 5450 - Urban Food and Agriculture: Perspectives and Research
- ENVS 5460 - Sustainable Urban Agriculture Field Study I
- ENVS 5470 - Sustainable Urban Agriculture Field Study II

Take **one** of the following elective courses (3 credit hours):

- GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing
- GEOG 5085 - GIS Applications for the Urban Environment
- GEOG 5335 - Contemporary Environmental Issues
- GEOG 5640 - Urban Geography: Denver and the U.S.
- GEOG 5680 - Urban Sustainability: Perspectives and Practice
- GEOG 5939 - Internship (a sustainable agriculture internship with a local food/ urban agriculture community organization)

# Teaching College-level Language and Literacy

Graduate School Policies and Procedures apply to this program.

The English Department at the University of Colorado Denver offers a Graduate Certificate in Teaching College-level Language and Literacy. It fulfills the increasing needs of educators seeking to deepen and to broaden their specialization. It allows an English Master's Candidate to specialize in an area of study in addition to the primary area of degree focus. The certificate does not grant state licensure. It ensures competency for those who already are licensed, provides documentation in expertise for those teaching in community colleges, and enables specialization for those with master's degrees in related fields (i.e. Rhetoric, Composition, Literature, Film Studies, Humanities, Education).

*This certificate can be completed fully online, fully on campus, or a combination of the two.*

## General Requirements:

1. Students must complete a minimum of 18 ENGL credit hours
2. Students must complete all 18 ENGL credits at the graduate (5000 or above) level.
3. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All credits for the certificate must be completed with CU Denver faculty.
5. All courses must be completed with ENGL subject code.
6. All candidates must possess a Bachelor's of Arts in any field.

## Additional Information

Additional Information about the Graduate Certificate in Teaching College-level Language and Literacy may be obtained from:

**Associate Professor:** Rodney Herring

**Office:** 1061 9th St. Park, Room 102

**Phone:** 303-315-7848

**E-mail:** Rodney.Herring@ucdenver.edu

## Required Courses (12 Hours)

- ENGL 5093 - Teaching of Writing
- ENGL 5155 - Genres of Writing
- **OR**
- ENGL 5135 - English Language Study
- ENGL 5165 - Literacy and Technology
- ENGL 5601 - Principles and Practices of Second Language Acquisition
- **OR**
- ENGL 5651 - Second Language Writing

## Electives

Choose 2 graduate level courses (may include 6 hours of Denver Writing Project Summer Institute)

# Teaching College-level Literature and Film Graduate Certificate

Graduate School Policies and Procedures apply to this program

The English Department at the University of Colorado Denver offers a Graduate Certificate in Teaching College-level Literature and Film. It fulfills the increasing needs of educators seeking to deepen and to broaden their content specialization. It allows an English Master's Candidate to specialize in an area of study in addition to the primary area of degree focus.

The certificate does not grant state licensure. It ensures competency for those who already are licensed, provides documentation in expertise for those teaching in community colleges, and enables specialization for those with master's degrees in related fields (i.e. Rhetoric, Composition, Literature, Film Studies, Humanities, Education).

## General Requirements:

1. Students must complete a minimum of 18 ENGL credit hours
2. Students must complete all 18 ENGL credits at the graduate (5000 or above) level.
3. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All credits for the certificate must be completed with CU Denver faculty.
5. All courses must be completed with ENGL subject code.
6. All candidates must possess a Bachelor's of Arts in any field.

## **Additional Requirements:**

Additional Information about the Graduate Certificate in Teaching College-level Literature and Film may be obtained from:

**Associate Professor:** Nancy Ciccone  
**Office:** 1061 9th St. Park, Room 100  
**E-mail:** nancy.ciccone@ucdenver.edu  
**Phone:** 303-315-7833

## **Required Courses**

- ENGL 5100 - Introduction to Graduate Studies
- ENGL 5145 - Theory (*Literary and Rhetorical Theory*)
- ENGL 5155 - Genres of Writing

## **Electives**

Choose 3 graduate level Literature or Film courses

# **Teaching English Language Learners Graduate Certificate (CTELL)**

► Graduate School Policies and Procedures apply to this program.

**Program Advisor:** Joanne Addison, Professor  
**Office:** 1059 Ninth Street Park, Room 104  
**Telephone:** 303-315-7000  
**E-mail:** Joanne.Addison@ucdenver.edu

## **Program Description**

To meet the increasing needs of individuals seeking advanced training in teaching English as a second language, the English department at CU Denver offers a graduate Certificate in Teaching English Language Learners (CTELL).

The certificate program, which can be completed through CU Online, is designed to build the necessary skills to teach adults English as a second language through focused preparation. It is primarily aimed at native speakers of English who want to teach overseas, but may serve the needs of international students wanting to teach English in their home country or other countries.

Upon successful completion of the program, CTELL participants will be able to:

- Discuss the theoretical basis of second language instruction
- Demonstrate a variety of effective ESL teaching techniques
- Explain, in pedagogically relevant ways, the linguistic structures of the English language

## **Curriculum**

1. Students must complete a minimum of 12 ENGL credit hours
2. Students must complete all 12 ENGL credits at the graduate (5000 or above) level.
3. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All credits for the certificate must be completed with CU Denver faculty.
5. All courses must be completed with ENGL subject code.
6. All candidates must possess a Bachelor's of Arts in any field.

## **Required Courses**

- ENGL 5171 - Language Theory
- ENGL 5601 - Principles and Practices of Second Language Acquisition
- ENGL 5651 - Second Language Writing

**Total: 9 Hours**

## **Elective Courses (Choose one of the following)**

- ENGL 5093 - Teaching of Writing

- An alternative elective such as a special topic course (i.e., ENGL 5190 Advanced Topics in Writing & Digital Studies ) approved by the program advisor.
- An internship (ENGL 5939 Internship ) approved by the program advisor.

**Total: 3 Hours**

**Total: 12 Hours**

## **Additional Information**

### **LENGTH OF TIME**

The course of study will typically last one academic year, including the summer session.

### **WHEN YOU MAY BEGIN**

You may begin in any semester. There is no fixed deadline for application for admission.

### **PREREQUISITES**

All applicants must have a bachelor's degree or the equivalent, with a 3.0 GPA, to be accepted to the program. Graduate students at CU Denver will also be permitted to apply for the certificate while they are concurrently completing another graduate degree. Permission may not be granted to graduate students in the applied linguistics option of the Master of Arts in English program.

Non-native speakers of English are required to submit an official TOEFL (Test of English as a Foreign Language) report showing a score of at least 600. Those who score below 600 but above 500 on the TOEFL may be admitted conditionally to the program. Under these conditions, students will have their English language skills assessed by the faculty of the program immediately after they arrive on campus to determine whether further courses are needed to develop English language proficiency. After assessment, the students may be assigned to full-time language study in an intensive English program, permitted to take graduate-level classes on a conditional basis along with further designated language study or permitted to begin graduate study without further restrictions.

# **Teaching for Cultural and Linguistic Diversity (TCLD) Certificate**

The TCLD Certificate is a graduate certificate providing a foundation in teaching content to bilingual or multilingual students. The program is designed for content-area teachers (math, science, social studies, etc.) who have English language learners in their classes. This certificate is also valuable to content area coaches or administrators who provide support for teachers

with English language learners. The certificate is appropriate for public school and community college personnel.

The certificate totals nine credits. All courses are three graduate credit hours and may be applied directly toward a full master's degree in CLDE while also fulfilling the requirements toward a Colorado Culturally and Linguistically Diverse Education Endorsement. Additional courses and applications are required for the master's degree and/or endorsement. Those pursuing the TCLD certificate must complete any three of the following courses:

- CLDE 5030 - Language Development of Multilingual Learners: Advanced
- CLDE 5050 - Assessment & Advocacy for Multilingual Learners
- CLDE 5070 - Linguistic Analysis of English
- CLDE 5820 - Teaching Multilingual Learners, Advanced
- LCRT 5770 - Effective Literacy Instruction for Diverse Learners

# U.S. History Graduate Certificate

## Introduction

The U.S. History Graduate Certificate provides CU Denver graduate students and the wider community the opportunity to explore topics in United States History while simultaneously learning professional skills in historical research and historical dissemination. This Certificate is designed for students interested in pursuing a graduate-level education in United States History and for professionals seeking accreditation and/or promotion in the fields of education, museums, historic preservation, government, law, and the arts.

The certificate can stand on its own or it can serve as a stepping stone to a Master's Degree in History.

Upon successful completion of the certificate, students will:

- Be able to pursue independent historical research projects
- Be able to analyze debates among historians
- Be able to analyze historical documents and develop arguments from them

## Program Delivery

This program has one on-campus requirement and the remainder of the certificate can be completed on campus or online.

## Declaring This Certificate

Applicants must have a B.A. or B.S. degree.

Interested students must register their intent to complete the certificate with the History Department Graduate Advisor, Ryan Crewe (Ryan.Crewe@ucdenver.edu). Students already enrolled in a graduate program at CU Denver can begin their certificate work at any point during their studies. Non-degree students must apply to the university as a non-degree seeking student.

## General Requirements

[Click here for information about Academic Policies.](#)

## Program Requirements

1. Students must complete a minimum of 12 HIST credit hours.
2. Students must complete all HIST credits for the certificate at the graduate (5000 or above) level.
3. Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA.
4. Students must complete all HIST credits for the certificate with CU Denver faculty.

## Required Courses

Complete the following required course:

- HIST 6013 - Introduction to the Professional Study of History

Complete **one** of the following 6000-level courses:

- HIST 6931 - Readings: Special Subjects in History (may be taken as an elective, if not taken in this category)
- HIST 6989 - Seminar: Special Subjects in History (may be taken as an elective, if not taken in this category)

Complete **two** of the following approved elective courses:

- HIST 5201 - Core Themes in U.S. History
- HIST 5209 - Race, Religion, and Belonging
- HIST 5210 - The American Revolution
- HIST 5212 - Civil War and Reconstruction
- HIST 5216 - History of American Popular Culture
- HIST 5217 - Consumer Culture
- HIST 5220 - U.S. Foreign Policy Since 1912
- HIST 5225 - Urban America: Colonial Times to the Present



- HIST 5226 - Capitalism in America
- HIST 5227 - American West
- HIST 5228 - Western Art and Architecture
- HIST 5229 - Colorado Historic Places
- HIST 5230 - Women in the West
- HIST 5234 - Introduction to Public History
- HIST 5236 - Colorado Mining and Railroads
- HIST 5238 - U.S. History Through Fiction
- HIST 5240 - National Parks History
- HIST 5242 - Oral History
- HIST 5243 - Public History Administration
- HIST 5244 - Interpretation of History in Museums: Exhibits and Education
- HIST 5245 - Heritage Tourism
- HIST 5260 - Digital Studies and Strategies
- HIST 5306 - Survey of Feminist Thought
- HIST 5307 - History of Sexuality
- HIST 5308 - Crime, Policing, and Justice in American History
- HIST 5343 - Women & Gender in US History
- HIST 5491 - United States History, 1865-1919
- HIST 5492 - United States History, 1919-1945
- HIST 5493 - United States History, 1945-1973
- HIST 5494 - Red and Blue America: U.S. History, 1973-Present

## Women's and Gender Studies Graduate Certificate

► Graduate School Policies and Procedures apply to this program.

The Women's and Gender Studies Graduate Certificate is administered through the Women's and Gender Studies program in the College of Liberal Arts and Sciences at the University of Colorado Denver. It is designed to provide members of the CU Denver population and public with specialized knowledge of the history, politics, literature and social practices related to women's and gender concerns. Acceptance into the certificate program is subject to CU Denver Graduate School Policies and Procedures.

The WGST certificate is available to any qualified graduate student or non-degree seeking graduate-level student at CU Denver. Students begin with a required, graduate-level methodology or foundational course before pursuing a combination of WGST-related course work. Upon completion of the certificate, students will have foundational and theoretical knowledge of the major concerns of women's and gender studies.

All prospective students must complete and submit an application to the program which can be obtained from the graduate advisor. Upon admission to the certificate program, students are eligible for the certificate.

## Program Requirements

1. Students must complete a minimum of 12 credit hours from approved coursework.
2. Students must complete a minimum of 9 credit hours for the certificate at the graduate (5000 or above) level.
3. Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA.
4. Students must complete all credits for the certificate with CU Denver faculty.

## Courses

Note: Some of the following courses may have prerequisites that *must* be met. Please see course descriptions.

## Required Course

Choose one of the following:

- ENGL 5306 - Survey of Feminist Thought
- HIST 5306 - Survey of Feminist Thought
- WGST 5306 - Survey of Feminist Thought
- HUMN 6010 - Methods and Theories of Feminism and Gender
- SSCI 6010 - Methods and Theories of Feminism and Gender Studies
- WGST 6010 - Methods and Theories of Feminism and Gender Studies

**Total: 3 Hours**

## Elective Courses (choose three)

These courses must be explicitly women's and/or gender and/or identity-based courses. They can be taken through any CU Denver department or program with the approval of an advisor. Only one 4000-level elective may be counted toward the certificate. All other course work must be 5000-level or above.

The following is a representative listing of WGST-related courses that may be taken toward the certificate; it is not comprehensive. Please note that some of these courses may be taught sporadically. Students should meet with their advisor to plan their course of study.

- ANTH 5200 - Gender in Cross-Cultural Perspective
- COMM 5020 - Feminist Perspectives on Communication
- COMM 5265 - Gender and Communication
- CRJU 5553 - Women, Crime, and Justice
- ENGL 4510 - Whores and Saints: Medieval Women
- -OR- ENGL 5510 - Whores and Saints: Medieval Women
- ENGL 5000 - Studies of Major Authors  
(depending on author being studied; e.g., Virginia Woolf, George Sand, etc.)
- ENGL 5306 - Survey of Feminist Thought
- HIST 5306 - Survey of Feminist Thought
- -OR- WGST 5306 - Survey of Feminist Thought
- ENGL 5308 - Contemporary Feminist Thought
- -OR- WGST 5308 - Contemporary Feminist Thought
- HIST 5303 - Sex and Gender in Modern Britain
- -OR- WGST 5303 - Sex and Gender in Modern Britain
- HIST 5307 - History of Sexuality
- -OR- WGST 5307 - History of Sexuality
- HIST 5345 - Gender, Science, and Medicine: 1600 to the Present
- -OR- WGST 5345 - Gender, Science and Medicine: 1600 to the Present
- HUMN 5720 - Sexuality, Gender and Their Visual Representation
- -OR- SSCI 5720 - Sexuality, Gender and Their Visual Representation
- PSCI 5245 - Gender, Globalization and Development
- -OR- WGST 5248 - Gender, Globalization and Development
- PSCI 5555 - International Women's Resistance
- -OR- WGST 5555 - International Women's Resistance
- PUAD 5910 - Nature and Scope of Interpersonal Violence
- PUAD 5920 - The Psychology of Interpersonal Violence
- PUAD 5930 - Interpersonal Violence Law and Policy
- SOCY 5550 - Seminar: Sociology of the Family
- SSCI 6010 - Methods and Theories of Feminism and Gender Studies
- -OR- WGST 6010 - Methods and Theories of Feminism and Gender Studies

### **Total: 9 Hours**

For more information about this certificate program, contact the Women's and Gender Studies Director, Gillian Silverman, 303-556-4529.

# Courses

See a list of All Courses by Course Type.

## Accounting

### **ACCT 2200 - Financial Accounting and Financial Statement Analysis**

The financial accounting process, the role of the profession and the analysis of financial statements. Principal focus on interpretation of financial statements, with emphasis on asset and liability valuation problems and the determination of net income. Prereq: MATH 1070 or MATH 1060 or MATH 1110 or MATH 1080 or MATH 1130 or MATH 1401 or MATH 1120 with a grade of C- or higher. Restriction: Restricted to undergraduate students at a sophomore standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 2220 - Managerial Accounting and Professional Issues**

Introduces managerial accounting. Shows managers how to use accounting information to make decisions. Principal focus on cost behavior analysis, budgeting and product costing. Prereq: MATH 1070, or MATH 1060, or MATH 1080, or MATH 1110, or MATH 1120, or MATH 1130, or MATH 1401 with a grade of C- or higher and ACCT 2200 with a C- or higher. Restriction: Restricted to undergraduate students at a sophomore standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 2550 - Introductory Accounting for Entrepreneurs and the Arts**

An integration of financial and managerial accounting processes as they relate to Entrepreneurs, Arts & Media managers and similar applications. This course will cover the analysis and interpretation of financial statements, asset and liability valuation and the determination of net income. Incorporates the use of accounting information to make decisions focusing on cost behavior analysis, budgeting and product costing in entrepreneurial and arts related businesses. Prereq: MATH 1070 or 1110. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 3220 - Intermediate Financial Accounting I**

A foundation course in financial accounting, this course provides an intensive analysis of generally accepted accounting principles, accounting theory and the construction and interrelation of financial statements for public corporations. Encourages critical thought and application of financial accounting standards to business transactions. A grade of C or higher is required in this course to proceed to the next level ACCT course or receive credit for the CPA license. Prereq: ACCT 2220 and DSCI/BANA 2010 both with a grade of 'C-' or higher. Restriction:

Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 3230 - Intermediate Financial Accounting II**

Continuing the intensive coverage of financial accounting from ACCT 3220/ACCT 6031, this course covers concepts of financial accounting theory and generally accepted accounting principles not covered in 3220/6031. This typically includes detailed coverage of liabilities and equity, especially the topics of leases, deferred taxes, pensions and stock-options. A grade of C or higher is required in this course to proceed to the next level ACCT course or receive credit for the CPA license. Prereq: ACCT 3220, completed with a grade of a C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Cross-listed with ACCT 6032. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 3320 - Intermediate Cost Accounting**

Cost accounting links financial and managerial accounting and emphasizes communication between accountants and managers. Topics include managerial uses of cost data for decision making, analysis of activities and cost behavior, the role of accounting in planning and control, and computer-assisted decision modelling. A grade of C or higher is required in this course to proceed to the next level ACCT course or receive credit for the CPA license. Prereq: ACCT 2220 and DSCI/BANA 2010 both with a grade of 'C-' or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Cross-listed with ACCT 6070. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 3939 - Internship**

Supervised experiences involving the application of concepts and skills in an employment situation. To enroll in an internship, students must work with the Experiential Learning Center on campus and have a 2.40 GPA or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ACCT 4030 - Financial Accounting**

Analysis of financial accounting concepts, the development of accounting thought and principles and critical review of generally accepted accounting principles. (Not recommended for candidates planning to sit for the CPA examination.) Note: Students who have taken ACCT 3220 or ACCT 3230 (or equivalent) may not take this course. Prereq: ACCT 2200 and ACCT 2220 or equivalent. Must have a 'C' or better in courses. Strictly enforced. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4054 - Accounting Information Systems**

This course focuses on the analysis, design, implementation and control of accounting information systems. Emphasis is placed on primary business processes including documentation, modeling, retrieving information to support managerial decisions and controlling risks. Topics include transaction cycles, relational database modeling, data analytics and information systems risks and controls. Must earn a grade of C or better to qualify for graduation at the UG level and to receive credit for the CPA license. Prereq: ACCT 3220 with a grade of C or higher and ISMG 2050 with a grade of 'C-' or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Cross-listed with ACCT 6054. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4070 - Management Accounting**

Designed to provide students with a foundation in management accounting models and information, with emphasis on management decision making uses of accounting information. (Not recommended for candidates planning to sit for the CPA examination.) Prereq: ACCT 2200 and 2220 or equivalent with a grade of a 'C' or better. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Note: Students who have taken ACCT 3320 or its equivalent may not take this course. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4240 - Advanced Financial Accounting**

Advanced financial accounting concepts and practices with emphasis on accounting for partnerships, business combinations and consolidations. Note: A grade of C or higher must be earned to receive credit for the CPA license. Prereq: ACCT 3230 or ACCT 6030 or ACCT 6032 each with a grade of C or higher, or department consent. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Cross-listed with ACCT 6024. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4280 - Accounting Ethics**

This course examines the ethical responsibilities of accounting professionals from a personal and professional perspective, including examples of ethical dilemmas accounting professionals confront. The course utilizes various authoritative codes of conduct, professional standards and applied ethical theory as ethical guidance for auditors, accountants, tax professionals, and accounting management. A variety of case studies are employed to give students practice in developing a decision making approach in dealing with difficult ethical scenarios. Prereq ACCT 4620. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4282 - Capitalism, Accounting and Ethical Choices**

Examines the development of the U.S. economy from 1850 to today with emphasis on the ethics of accounting, capitalism, and government controls. Prereq: ACCT 3220 with a C or higher

or permission. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4330 - Managerial Accounting Problems and Cases**

Critical analysis of advanced topics in managerial accounting. Considerable use of cases and current readings. Prereq: Completion of ACCT 3320 with a grade of 'C'. Strictly enforced. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4370 - International Accounting**

Designed to expose students to the international aspects of accounting and financial management. Includes discussion of some of the different financial accounting practices across countries; financial statement analysis in a global context, international auditing practices and procedures, international tax implications and the implications of operating within the regulations of the Foreign Corrupt Practices Act, the European Union, North American Free Trade Agreement and General Agreement on Tariffs and Trade. Prereq: Completion of ACCT 3220 with a grade of 'C' or better. Strictly enforced. Cross-listed with ACCT 6370 and INTB 6370. Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4410 - Fundamentals of Federal Income Tax**

Provisions and procedures of federal income tax laws and requirements affecting individuals and business organizations, including problems of tax planning and compliance. Note: Students cannot receive credit for both ACCT 4410 and ACCT 6140. Note: A grade of C or higher must be earned to receive credit for the CPA license. Prereq: ACCT 3220 with a C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Cross-listed with ACCT 6140. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4420 - Taxation of Business Entities**

A federal tax course stressing tax planning issues affecting corporations (both C corporations and S corporations) and partnerships. Note: A grade of C or higher must be earned to receive credit for the CPA license. Note: Students cannot receive credit for both ACCT 4420 and ACCT 6150. Cross listed with ACCT 6150. Prereq: ACCT 2220 with a C- or higher. Prereq: ACCT 4410 with a C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4442 - Accounting: Professional Research and Communications**

This course provides students with a structured approach to researching and communicating practice-oriented financial accounting, auditing, and tax-related issues. After completing this

course, students should be able to effectively: (1) Communicate (both oral and written) solutions to practice-oriented financial accounting, auditing, and tax-related issues. (2) Navigate through U.S. and international accounting, auditing, and tax authorities. (3) Conduct systematic research for all types of accounting-related problems then reach and communicate efficient conclusions using a variety of techniques. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Prereq: ACCT 4620 and ACCT 4410 both with a grade of C or higher. Cross-listed with ACCT 6442. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4490 - Experiential Learning**

Designed to provide practical knowledge on developing a professional practice in accounting or financial management. Topics: Marketing, operating a professional practice. Lectures, guest speakers student projects. Prereq: ACCT 3220 completed with a 'C' or better, or permission of instructor. Cross-listed with ACCT 6490. Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4520 - Oil and Gas Accounting**

The Oil and Gas Accounting course is designed to give students an overview of the oil and gas industry and the particular accounting issues this industry faces. The focus is on the oil and gas industry but many of the issues discussed are appropriate and applicable to all energy-related entities. This is a valuable learning experience for those interested in acquiring an understanding of the accounting issues for energy management firms in preparation for entry into public accounting. The course enjoys support from the energy industry in the form of guest speakers and project ideas. Prereq: ACCT 3220 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Cross-listed with ACCT 6520. Max Hours: 3 credits. **Semester Hours:** 3 to 3

### **ACCT 4620 - Auditing Theory**

Auditing Theory: Focus on the professional responsibilities of CPAs, generally accepted auditing standards, and PCAOB auditing standards, with emphasis on the theory underlying the development of standards, objectives and procedures. Students cannot receive credit for both ACCT 4620 & ACCT 6020. Note: A grade of C or higher must be earned to receive credit for the CPA license. A grade of B or higher must be earned if planning to take 6025 in the future. Prereq: ACCT 3220 and 4054 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Cross-listed with ACCT 6020. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4625 - Auditing Practice**

Focus on the application of generally accepted auditing standards and PCAOB auditing standards to practice. Emphasis on procedures used by CPAs to gather and document audit evidence. Prereq: ACCT 4620 with a grade of C (2.0) or higher. Note: A grade of C or higher must



be earned to receive credit for the CPA license. Note: Students cannot receive credit for both ACCT 4625 and ACCT 6025. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4780 - Accounting and Information Systems Processes and Controls**

The course is designed to develop knowledge and skills used to understand and evaluate corporate accounting processes and systems. It focuses on financial and information system internal controls and the flow of corporate information through an accounting system. A financial system objective and risk assessment approach is used to present concepts and techniques for evaluating the adequacy of system processes and controls. Cross-listed with ACCT 6510, ISMG 4780, and ISMG 6510. Prereq: Completion of ACCT 2200, ACCT 2220 and ACCT 3054 with a grade of 'C' or better (strictly enforced). Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4800 - Accounting for Government and Nonprofit Organizations**

Planning and control of government and nonprofit organizations. Includes program budgets, responsibility accounting and fund accounting. Note: A grade of C or higher must be earned to receive credit for the CPA license. Prereq: ACCT 3220 with a C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Cross-listed with ACCT 6080. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4840 - Independent Study**

Restricted to undergraduate Business majors with junior standing or higher. Max hours: 8 Credits. **Semester Hours:** 1 to 8

### **ACCT 4900 - Professional Certification in Accounting**

This course will prepare students for the Uniform Certified Public Accountant Examination, including the Auditing and Attestation (AUD), Business Environment and Concepts (BEC), Financial Accounting and Reporting (FAR), and Regulation (REG) sections. Topical coverage will include a balance of most-tested topics, difficult topics, and exposure to topics not addressed in required accounting degree courses. Note: there will be a materials fee of \$1,100 for this course. All materials will continue to be available until successful passage of the CPA Exam. Note: Undergraduate Accounting students typically perform better in this class when taking it during the final semester prior to graduation. Restriction: Restricted to Undergraduate and MS Accounting students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4915 - Accounting for the Public Interest**

Applies accounting knowledge and concepts in a not-for-profit organization. Student volunteers help with functions or special projects and are supervised by both faculty members and

personnel from the agency to which they are assigned. Prereq: Permission of instructor. Cross-listed with ACCT 6015. Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 4950 - Special Topics**

Research methods and results, special topics and professional developments in accounting. Consult the current 'Schedule Planner' for semester offerings. Prereq: Varies according to topic and instructor requirements. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ACCT 5939 - Internship**

Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **ACCT 6015 - Accounting for the Public Interest**

Applies accounting knowledge and concepts in a not-for-profit organization. Student volunteers help with functions or special projects and are supervised by both faculty members and personnel from the agency to which they are assigned Note: This class is rarely offered. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Cross-listed with ACCT 4915. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6020 - Auditing Theory**

Focus on the professional responsibilities of CPAs, generally accepted auditing standards, and PCAOB auditing standards, with emphasis on the theory underlying the development of standards, objectives and procedures. Students cannot receive credit for both ACCT 4620 & ACCT 6020. Note: A grade of C or higher must be earned to receive credit for the CPA license. Prereq: ACCT 6030 or ACCT 6031 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 4620. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6024 - Advanced Financial Accounting**

Advanced financial accounting concepts and practice with emphasis on accounting for partnerships, business combinations and consolidations. Prereq: ACCT 3230 or ACCT 6030 or ACCT 6032 each with a grade of C or higher, or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 4240. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6025 - Auditing Practice**

Focus on the application of generally accepted auditing standards and PCAOB auditing standards to practice. Emphasis on procedures used by CPAs to gather and document audit evidence. Prereq: ACCT 6020 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Students cannot receive credit for both ACCT 4625 and ACCT 6025. Note: A grade of C or higher must be earned to receive credit for the CPA license. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6031 - Intermediate Financial Accounting I**

This course is designed to provide students with a comprehensive review and understanding of financial accounting principles, procedures, and financial statements as well as the measurement of income and assets. Skills related to problem solving, analytical thinking, and writing will also be developed. NOTE: Students who have taken ACCT 3220 (or equivalent) may not receive credit for ACCT 6031. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6032 - Intermediate Financial Accounting II**

Continuing the intensive coverage of financial accounting from ACCT 3220/ACCT 6031, this course covers concepts of financial accounting theory and generally accepted accounting principles not covered in 3220/6031. This typically includes detailed coverage of liabilities and equity, especially the topics of leases, deferred taxes, pensions and stock-options. Note: A grade of C or higher must be earned to receive credit for the CPA license. NOTE: Students who have taken ACCT 3230 (or equivalent) may not receive credit for ACCT 6032. Prereq: ACCT 6031 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 3230. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6033 - Advanced Managerial Accounting**

Critical analysis of advanced topics in managerial accounting. Note: This class is rarely offered. Prereq: ACCT 3320. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6054 - Accounting Information Systems**

This course focuses on the analysis, design, implementation and control of accounting information systems. Emphasis is placed on primary business processes including documentation, modeling, retrieving information to support managerial decisions and controlling risks. Topics include transaction cycles, relational database modeling, data analytics and information systems risks and controls. Must earn a grade of C or better to qualify for graduation at the UG level and to receive credit for the CPA license. Prereq: ACCT 6031 or BUSN 6550 or department consent. Restriction: Restricted to graduate majors and NDGR majors with

a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 4054 (previously ACCT 3054). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6070 - Intermediate Cost Accounting**

Cost accounting links financial and managerial accounting and emphasizes communication between accountants and managers. Topics include managerial uses of cost data for decision making, analysis of activities and cost behavior, the role of accounting in planning and control, and computer-assisted decision modelling. Note: A grade of C or higher must be earned to receive credit for the CPA license. Note: STUDENTS WHO HAVE TAKEN ACCT 3320 (or equivalent) MAY NOT TAKE THIS COURSE. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 3320. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6080 - Accounting for Government and Nonprofit Organizations**

Nonprofit Organizations. Planning and control of government and nonprofit organizations. Includes program budgets, responsibility accounting and fund accounting. Note: A grade of C or higher must be earned to receive credit for the CPA license. Prereq: ACCT 3220 or BUSN 6550 or ACCT 6031 each with a C or higher, or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 4800. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6140 - Fundamentals of Federal Income Tax**

Provisions and procedures of federal income tax laws and requirements affecting individuals and business organizations, including problems of tax planning and compliance. Note: A grade of C or higher must be earned to receive credit for the CPA license. Note: Students cannot receive credit for both ACCT 4410 and 6140. Cross-listed with ACCT 4410. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6150 - Taxation of Business Entities**

A federal tax course stressing tax planning issues affecting corporations (both C corporations and S corporations) and partnerships. Note: A grade of C or higher must be earned to receive credit for the CPA license. Note: Students cannot receive credit for both ACCT 4420 and ACCT 6150. Cross-listed with ACCT 4420. Prereq: ACCT 6140 or ACCT 4410 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6220 - Seminar: Corporate Financial Strategy and Controls**

This course is designed to provide a comprehensive understanding of the wide ranging responsibilities of the Controller, including the timely and accurate preparation of the periodic financial statements, maintenance of an adequate records system, a comprehensive set of internal controls and budgets in order to manage and mitigate risk, how to enhance the accuracy of the company's reported financial results and ensure compliance with GAAP or IFRS. Topics also include techniques for cash forecasting, controlling and administering budgets, and developing effective long-range plans. Prereq: ACCT 6030 or ACCT 6032 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6225 - Controllership: Managerial Strategy and Benefits Analy**

This course is designed to provide a comprehensive understanding of the wide ranging responsibilities of the Controller from a managerial and tax accounting perspective. Topics include establishing a cost accounting system, planning and control of manufacturing costs, business and strategic planning, mergers and acquisitions and a variety of tax related issues such as employment tax, employee vs. contractor, and choice of entity. The course will also include a discussion of benefits analysis, stock based compensation, ISO, NQSO and 83b elections. Prereq: ACCT 6220 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6230 - Advanced Topics in Mergers and Acquisitions**

Mergers and acquisitions are often a key component of organizational strategy for growth and competitive advantage; yet empirical studies indicate many of these transactions fail to meet their intended objectives. This course prepares accounting students as financial leaders to positively influence the achievement of planned synergies and acculturation for more successful M&A transactions. Integrating perspectives from accounting and organizational development, course topics include transaction valuation, contingent consideration, and asset impairment testing to organizational systems theory and post-transaction integration. Prereq: Grade of C (2.0) or higher in ACCT 6020 or ACCT 4620 and ACCT 6070. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6250 - Seminar: Financial Accounting**

Nature and origin of accounting theory and the development of postulates, principles and practices. Methodology appropriate to development and evaluation of accounting theory, with special emphasis on accepted research standards and procedures. Note: A grade of C or higher must be earned to receive credit for the CPA license. Co-req: ACCT 6032 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6260 - Seminar: Managerial Accounting**

Focuses on the conceptual foundations of managerial accounting. Behavioral and quantitative approaches regarding information for decision making, planning, control, performance evaluation and other issues are investigated. Note: A grade of C or higher must be earned to receive credit for the CPA license. Prereq: ACCT 6070 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6280 - Accounting Ethics**

This course examines the ethical responsibilities of accounting professionals from a personal and professional perspective, including examples of ethical dilemmas accounting professionals confront. The course utilizes various authoritative codes of conduct, professional standards and applied ethical theory as ethical guidance for auditors, accountants, tax professionals, and accounting management. A variety of case studies are employed to give students practice in developing a decision making approach in dealing with difficult ethical scenarios. Prereq: ACCT 6031 or BUSN 6550. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6282 - Capitalism, Accounting and Ethical Choices**

Examines the development of the U.S. economy from 1850 to today with emphasis on the ethics of accounting, capitalism, and government controls. Prereq: ACCT 2220 or BUSN 6550 (not strictly enforced). Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6285 - Accounting and Finance for Sustainability**

Topics in accounting and finance related to business sustainability include the merits and challenges of a triple-bottom-line perspective, mandatory and voluntary reporting, environmental liability measurement and disclosure, emissions trading, green investments, shareholder activism, microfinance, and socially responsible investing. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6290 - Management Control Systems**

Focuses on the design and use of control systems which ensure that people in organizations behave consistently with the organizational goals. Controls for communication, motivation and performance evaluation (along with informational requirements) are stressed through analysis of cases and classroom discussion. Note: This class is rarely offered. Prereq: BUSN 6550 or equivalent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ACCT 6320 - White Collar and Financial Crimes**

Course provides an opportunity to examine criminal activity perpetrated by individuals and/or organizations in a position of trust. White collar and financial crimes are qualitatively different from street crimes or violent crimes, yet they are highly destructive. Cover: types of crime, social impact, prevention, detection, regulating etc. Prereq: BUSN 6550 with a C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ACCT 6330 - Fraud Auditing**

This course provides an introduction to and guidance for creation of an effective fraud audit program in core business systems. The fraud audit is designed specifically to detect potential fraud and is vastly different than the traditional audit. Fraud auditing focuses on proven fraud methodology that allows auditors to discover fraud versus investigating it. The course: • Explains how to create a fraud audit program • Shows auditors how to locate fraud through the use of data mining • Focuses on proven methodology for detecting fraudulent transactions • Explores fraud discovery within specific corporate F&A functions, such as disbursement, procurement, payroll, revenue misstatement, inventory, journal entries, and management override. Prereq: ACCT 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ACCT 6340 - Financial Statement Analysis**

Financial statements are used as an information source on which to base investment, lending potential or even employment. Designed to develop skills in using, understanding, analyzing, and interpreting financial statements and to make students aware of the value and limitations of financial statement information. Note: Should take in the third semester of the graduate program. Prereq: BUSN 6550 or ACCT 6031 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ACCT 6350 - Current Issues in Professional Accounting**

An in-depth analysis of current issues in the accounting profession, including ethics development, and validity of standards and regulations. Prereq: ACCT 3230, ACCT 4620, ACCT 6020 or permission of instructor. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ACCT 6360 - Fraud Examination**

This course examines the theories and methods of the full spectrum of fraud examination including prevention, detection, investigation, and adjudication. In this course, students will

explore the significant differences between fraud examination and auditing, going beyond detection into the investigative and adjudication process. Prereq: ACCT 6020 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6370 - International Accounting**

Designed to expose students to the international aspects of accounting and financial management. Includes discussion of some of the different financial accounting practices across countries; financial statement analysis in a global context, international auditing practices and procedures, international tax implications and the implications of operating within the regulations of the Foreign Corrupt Practices Act, the European Union, North American Free Trade Agreement and General Agreement on Tariffs and Trade. Prereq: BUSN 6550 or equivalent. Note: Students cannot receive credit for both ACCT 6370 and INTB 6370. IFRS's are reviewed and compared with the requirements of US GAAP. Cross-listed with INTB 6370 and ACCT 4370. Prereq: ACCT 6031 or BUSN 6550. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6380 - Forensic Accounting**

An examination of investigative auditing, fraud auditing, litigation support, and economic quantification of damages. Prereq: ACCT 4620 or ACCT 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6400 - Taxation of C Corporations and Shareholders**

This course is a study of federal income tax problems facing corporations and corporate shareholders. The course addresses introductory corporate tax issues found in Subchapter C of the Internal Revenue Code, including defining a "corporation" for federal income tax purposes; tax consequences associated with the formation of a corporation; taxation of corporate operations (including an analysis of the differences that exist between earnings and profits, dividend distributions and taxable income); corporate redemption transactions; partial liquidations; complete liquidations; and the acquisition, sale and disposition of corporate entities in transactions governed by Sections 336(e) and 338 of the Internal Revenue Code. Prereq: ACCT 6150 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6410 - Advanced Tax for Individuals**

This course is an advanced federal income tax course stressing the use of the Internal Revenue Code, Treasury regulations, case law, and administrative guidance to resolve federal income tax



issues affecting individuals. Topics include items of gross income inclusion, exclusions, deductions, items of non-recognition, characterization of income, and tax rates. Prereq: Grade of C or higher in ACCT 6140 or ACCT 4410. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6442 - Accounting: Professional Research and Communications**

This course provides students with a structured approach to researching and communicating practice-oriented financial accounting, auditing, and tax-related issues. After completing this course, students should be able to effectively: (1) Communicate (both oral and written) solutions to practice-oriented financial accounting, auditing, and tax-related issues. (2) Navigate through U.S. and international accounting, auditing, and tax authorities. (3) Conduct systematic research for all types of accounting-related problems then reach and communicate efficient conclusions using a variety of techniques. Prereq: ACCT 6030 or ACCT 6032 or ACCT 3230 each with a grade of C or higher, or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 4442. Max hours: **Semester Hours:** 3 to 3

### **ACCT 6450 - Tax Research**

This course provides a study of various methodologies used in tax research and tax planning and requires students to present their results through various forms of business communication. In particular, this course explores techniques (with an emphasis on electronic/on-line techniques) for locating and researching judicial cases, statutory materials and legislative histories, and administrative materials promulgated by the Internal Revenue Service applicable to tax-related issues and problems. Students must present their tax research results for various client-based hypothetical factual patterns in written formats, including memoranda and client letters, and through individual oral and group presentations. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6470 - Internal Auditing**

Intro course for business students and CIA candidates. Topics include: IA fundamentals; IA standards; internal controls; managing the IA department; IA working papers, procedures and evidences; fraud detection and prevention; ethics; evaluation of the IA function, and Sarbanes-Oxley Act of 2002. Prereq: ACCT 4620 or ACCT 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6480 - Partnership Taxation**

This course focuses on fundamental tax issues relating to partnerships and partners arising from the formation, operation, and liquidation of partnerships. Course work includes an examination of pertinent federal income tax returns of a partnership. Prereq: ACCT 6150 with a grade of C or higher. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6490 - Experiential Learning**

Designed to provide practical knowledge on developing a professional practice in accounting or financial management. Topics: Marketing, operating a professional practice. Lectures, guest speakers (if you are interested in being a guest lecturer for the class contact the instructor), and student projects. Prereq: ACCT 3220 or permission of instructor. Cross-listed with ACCT 4490. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6510 - Advanced Accounting Information Systems**

The course is designed to develop knowledge and skills used to understand and evaluate incorporating accounting processes and systems. Focuses on financial and information system internal controls and the flow of corporate information through an accounting system. A financial system objective and risk assessment approach is used to present concepts and techniques for evaluating the adequacy of system processes and controls. Prereq: ACCT 6054 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6520 - Issues in Oil and Gas Accounting**

The Oil and Gas Accounting course is a course designed to give students an overview of the oil and gas industry and the particular accounting issues this industry faces. The focus is on the oil and gas industry but many of the issues discussed are appropriate and applicable to all energy-related entities. This is a valuable learning experience for those interested in acquiring an understanding of the accounting issues for energy management firms in preparation for entry into public accounting. The course enjoys support from the energy industry in the form of guest speakers and project ideas. Prereq: BUSN 6550 or ACCT 3220 or permission of instructor. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Cross-listed with ACCT 4520. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6620 - Seminar: Auditing and Other Assurance Services**

A graduate seminar course providing in-depth exposure to specialized topics in auditing and other assurance services, with an emphasis on recent developments in the profession. Includes coverage of generally accepted auditing standards and PCAOB standards. Note: A grade of C or higher must be earned to receive credit for the CPA license. Prereq: ACCT 6020. Restriction:

Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6800 - Special Topics**

Research methods and results, special topics and professional developments in accounting. Consult the current 'Schedule Planner' for semester offerings as new special topics courses are frequently added. Prereq: Varies according to topics and instructor requirements. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ACCT 6840 - Independent Study**

Permission of instructor required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 8

### **ACCT 6900 - Professional Certification in Accounting**

This course will prepare students for the Uniform Certified Public Accountant Examination, including the Auditing and Attestation (AUD), Business Environment and Concepts (BEC), Financial Accounting and Reporting (FAR), and Regulation (REG) sections. Topical coverage will include a balance of most-tested topics, difficult topics, and exposure to topics not addressed in required accounting degree courses. Note: there will be a materials fee of \$1,100 for this course. All materials will continue to be available until successful passage of the CPA Exam. Note: Undergraduate Accounting students typically perform better in this class when taking it during the final semester prior to graduation. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ACCT 6939 - Internship/Cooperative Education**

Supervised experiences involving the application of concepts and skills in an employment situation. Prereq: 15 semester hours for MS students and 21 hours for MBA students and a cumulative 3.2 GPA. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ACCT 6950 - Master's Thesis**

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 8 Credits. **Semester Hours:** 1 to 8

## **Anthropology**

### **ANTH 1111 - Freshman Seminar**

Restriction: Restricted to Freshman level students. Repeatable. Max hours: 9 Credits.  
**Semester Hours:** 1 to 3

### **ANTH 1302 - Introduction to Archaeology**

Introduces the study of past cultures and their environments. Emphasis is on the scientific method, aspects of research design and analytical techniques used by archaeologists to determine chronology, taphonomy, source production areas, exchange networks, and human-environment interactions. Note: Three hours of lecture and a two-hour lab each week. Term offered: fall, spring, summer. Max hours: 4 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS3 **Semester Hours:** 4 to 4

### **ANTH 1303 - Introduction to Biological Anthropology**

Introduces the study of human biological evolution, both processes and outcomes, from primate ancestors to fossil hominids to contemporary human populations. Methods of obtaining and interpreting data concerning the genetic, biological and evolutionary basis of physical variation in living and skeletal populations. Note: 3 hours of lecture and a 2 hour lab each week. Term offered: fall, spring, summer. Max hours: 4 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC1 **Semester Hours:** 4 to 4

### **ANTH 2102 - Culture and the Human Experience**

An application of the concept of culture to several aspects of the human experience, including gender relations, emotion and personality, cognition, language, health and healing and economic behavior. In exploring these dimensions of the human experience, the course focuses on selected cultures from each of the world's major geographic areas. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS3 **Semester Hours:** 3 to 3

### **ANTH 2400 - Exploring Culture through Social Media**

Introduction to social media and analysis applied to cultural change. Focus on theories and practices of non-fiction image-making and "doing digital ethnography" to examine a range of experience and knowledge among different societies, communities, technologies, policy discourses and ourselves. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 2840 - Independent Study**

Term offered: fall, spring, summer. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **ANTH 3000 - Globalization, Migration and Transnationalism**

Examines the cultural dynamics of globalization, including: the development of special economic zones in the global south, rural to urban migration, transnational migration, the maintenance of transnational ties, and cross-border social formations. Reviews the dynamics of globalization through case studies and film. Term offered: spring. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ANTH 3042 - Lost Worlds and Crystal Skulls**

This class explores the differences between science and pseudoscience specifically within the realm of anthropology. Scientific method and critical thought are employed in a way that trains students to question and recognize the difference between fact and fiction in data. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 3045 - Cannabis Culture**

Familiarizes students with anthropological approaches to the culture of cannabis, including medicinal and recreational. Topics: history, cultural uses, legalization, cannabis capitalism, health effects, race and inequality, regulatory policies, retailing and consumption. Ethnographic research for data collection emphasized. Term offered: summer. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ANTH 3101 - Foundations of Cultural Anthropology**

Covers current theories in cultural anthropology and discusses the nature of field work. Major schools of thought and actual field studies are explored with an emphasis on anthropological data gathering, analysis and writing. Prereq: ANTH 2102 with a C- or higher. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 3121 - Language, Culture, and Communication**

Definitions of language and communication and their relationship to human behavior, thought and culture. The classification of languages, linguistic universals, language acquisition, multilingualism, and nonhuman communication, with consideration of the evolutionary implications of such studies. Prereq: ANTH 2102 with a C- or higher. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ANTH 3142 - Cultural Diversity in the Modern World**

An in-depth analysis of the phenomena of culture and application of the culture concept to understanding cultural diversity in the modern world. Applies the concept of culture to several basic aspects of human social life, for example: social class and gender relations, ethnicity, racism and sexism, education, health and economic behavior. Students explore these issues in the context of case studies of particular groups and/or communities, focusing primarily on the diversity of cultural expression in contemporary U.S. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 3150 - Special Topics in Medical Anthropology**

Seminar series on current issues in medical anthropology. Faculty offer a range of different courses, including the political economy of drugs, health and human rights, and reproductive health. Prereq: ANTH 2102 with a C- or higher. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 3301 - World Prehistory**

Explores of 3.5 million years of human cultural development that examines the prehistory of Africa, Asia, Europe and the Americas. Patterns and processes that underlie the earliest hominid expansion out of Africa, tool use, origins of fire, the peopling of the Americas, the development of metallurgy, the domestication of plants and animals and the rise of cities and the state are examined. Emphasis is on both regional developments and landmark projects that have helped clarify prehistory. Note: Introductory course in Archaeology (ANTH 1302) recommended. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 3315 - North American Archaeology**

Course provides a survey of the prehistoric and historic archaeology of the United States, Canada and Northern Mexico. Current knowledge of the subject and current debates are discussed. Prereq: ANTH 1302 with a C- or higher. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 3316 - History of Human Environmental Impacts**

Humans exist as active members of an ecosystem. There is increasing awareness that human actions have changed the environment and continue to do so. While ecologists, climatologists, and engineers work to address current and future environmental problems, the discipline of archaeology can provide a time depth and crosscultural breadth of perspective on how such issues have impacted human societies. This course will investigate and critically assess the claim that environmental and ecological factors have played a key role in the dissolution of once thriving civilizations. Examples will be drawn from across time and space, specifically emphasizing the archaeological record and the perspective it provides on a problem that is of critical relevance today. In this course students will: 1) Learn how humans have engaged with their environments over the course of our species' evolutionary history; 2) Critically assess

contemporary discussions of collapse and ecocide by contextualizing humanenvironment interactions within the frameworks of resilience, niche construction, and ecosystem engineering; 3) Use 'lessons from the past' to inform contemporary ecological debates; 4) Objectively evaluate the factual basis of various claims made about how humans affect, have affected, and likely will affect their environments; 5) Actively engage with the community to build sustainable gardens. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 3320 - Southwestern Archaeology**

Considers the origins, characteristics, and interrelationships of the major culture areas in the American southwest, including the Anasazi, Hohokam, Mogollon, Sinagua and Northern Mexico. Note: ANTH 1302 recommended but not required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 3410 - Anthropology of Work**

Explores the culture of workforces and workplaces. Ethnographic methods and collaborative research practices comprise the framework of the course to examine people, occupations and work cultures engaged in production and consumption of commodities at local and global levels. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 3500 - Human Osteology**

Provides in-depth knowledge of human osteology, including the following topics: skeletal anatomy; age, sex and stature determination; skeletal trauma/pathology; and taphonomy. Recitation component provides hands-on experience with skeletal material. Prereq: ANTH 1303 with a C- or higher. Max Hours: 4 Credits. **Semester Hours:** 4 to 4

### **ANTH 3512 - Human Evolution**

Provides an overview of the fossil and archaeological evidence for human origins. Theory and method in paleoanthropology is emphasized. The goal is to outline current knowledge of human biological evolution and the lifeways of our evolutionary relatives. Prereq: ANTH 1303 with a C- or higher. Term offered: fall, spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 3560 - Human Variation and Adaptation**

This course explores the nature of modern human biological variation and adaptation. We address the evolutionary and biological theory that informs our study of contemporary human anatomy and physiology. Topics covered include, the nature vs. nurture debate, variation in skin pigmentation and the concept of "race", skeletal adaptations, adaptations to extreme environments and sexbased variation. Term offered: every other year. Prereq: ANTH 1303 with a C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 3590 - Primate Behavior Research at the Zoo**

Students will review information on primates, learn about data collection models, design a behavior observation project on captive primates, collect and analyze behavior data, write and present a formal scientific paper. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 3666 - Anthropology of Death**

The primary goal of the course is to identify and understand the range of human expression through the treatment of human remains in anthropological literature with focus on burials, mortuary practices, and associated rituals. Along with more theoretical papers, specific case studies will be used to address a variety of topics and issues, such as historic and prehistoric social organization, bio-archaeology, cannibalism, human sacrifice, mummification, the ethics of studying human remains, and the treatment of pets in prehistory. The time range that we will cover in the course will span from the Neolithic to the early 20th century, and numerous cultures from all parts of the globe will be our subject matter. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 3939 - Internship**

Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Note: students must work with the Experiential Learning Center advising to complete a course contract and gain approval. Prereq: Junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ANTH 4040 - Anthropology of Food and Nutrition**

Examines the myriad relationships between food as a biological necessity and eating as a socially and culturally conditioned activity. Takes a biocultural perspective that considers not only the tremendous variety of foods we eat, but also the complex meanings and importance attached to food and eating. Prereq: Junior standing or higher. Cross-listed with ANTH 5040. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 4050 - Quantitative Methods in Anthropology**

Surveys the ways of deriving meaning from anthropological data by numerical means, including, but not confined to basic statistical procedures. Prereq: Junior standing or higher. Cross-listed with ANTH 5053. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 4121 - Zooarchaeology**

Introduction to the theory and methods of zooarchaeology through lectures, readings, and hands-on lab work identifying and analyzing mammalian skeletal material. Students will learn what mammalian remains indicate about biological and cultural evolution of humans. Cross-



listed with ANTH 5121. Prereq: ANTH 1303 with a C- or higher. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ANTH 4230 - Anthropology and Community Based Participatory Research**

The seminar explores anthropological critiques, knowledge production and multi-media approaches to community based participatory research (CBPR) such as photovoice and digital storytelling to understand the history of CBPR and analyze partnerships between university researchers and community representatives. Cross-listed with ANTH 5230. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 4290 - Anthropology and Public Health**

"This course critically explores anthropological approaches to public health problems. Through a number of key issues and case studies, we examine how public health practice can be enhanced through anthropological research, theory and methodology. Prereq: Junior standing or higher. Cross-listed with ANTH 5290. Max hours: 3 Credits." **Semester Hours:** 3 to 3

### **ANTH 4300 - Migrant Health**

This course examines health issues associated with transnational migration from an anthropological point of view. Drawing upon case studies, we examine the health of migrant communities in both host and sending nations. Prereq: Junior standing or higher. Cross-listed with ANTH 5300. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 4320 - Archaeology of Mexico and Central America**

Surveys the major prehistoric and protohistoric cultures and societies of that area of Mexico and Central America identified with the evolution of Meso-American civilization. Major topics include early human colonization of the Americas, the domestication of plants and animals, the emergence of regionally-based cultures and societies, trade and exchange and the evolution of urbanism and the state. Primary emphasis on such ancient cultures and societies as those of the Olmec, Zapotec, Maya, Teotihuacan, Toltec and Aztec. Prereq: Junior standing or higher. Cross-listed with ANTH 5320. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 4330 - Lithic Analysis**

Examines the theoretical basis and methodological tools used by archaeologists in the analysis of prehistoric stone tools. Topics of discussion include the mechanics of stone fracture, typologies, use wear analysis and core reduction techniques. Prereq: Junior standing or higher. Cross-listed with ANTH 5330. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 4350 - Anthropology of Globalization**

This course provides an overview of anthropological contributions to the study of globalization. Particular attention is devoted to: transformations in global capitalism, state and immigration policy, transnational families, health and transnationalism. Prereq: Junior standing or higher. Cross-listing ANTH 5350. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 4380 - Archaeology of Hunters-Gatherers**

Explores the theory and methods used by archaeologists to investigate prehistoric hunter gatherers. Topics of concern include mobility, subsistence, procurement, and socio-political organization. Prereq: Junior standing or higher. Cross-listed with ANTH 5380. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 4440 - Museums in the 21st Century**

This is an advanced course on natural history/anthropology museums. It will examine practical issues facing museums, and consider the complex questions that museums raise. The class includes lectures, discussions, and hands-on collection work, and exhibit/ outreach development. Cross-listed with ANTH 5440. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 4500 - Advanced Issues in Human Evolution**

This flexible course offers an advanced treatment of issues in human biological evolution. Topics may emphasize morphological evolution, behavioral evolution, the environment of human evolution, non-human primate comparative information. Prereq: Junior standing or higher. Cross-listed with ANTH 5500. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 4570 - Landscape Archaeology**

Introduces spatial archaeology through intrasite analysis and regional studies. Methods treated include site location and quantitative spatial organization. Theoretical topics include definitions of community, ancient urbanism and the impact of subsistence and politics on relations to the landscape. Prereq: Junior standing or higher. Cross-listed with ANTH 5570. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 4580 - Neanderthals and the Origin of Modern Humans**

Focuses on the human fossil record for the taxon *Homo sapiens*, including the earliest members of this group ("early" or "archaic" *Homo sapiens*), the Neanderthals and so-called "anatomically modern" *Homo sapiens*. The goal of the course is to survey the major issues within the area of modern human origins, and to learn about the evolutionary relationships, lifeways and behaviors of these groups. Prereq: Junior standing or higher. Cross-listed with ANTH 5580. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 4810 - Integrating Anthropology**

Designed to build on specialized course work in the subdisciplines of anthropology, this course emphasizes the basic concepts that integrate and unite the discipline and give it unique perspective. These are the concepts of culture, adaptation and human evolution. In the last several weeks of the course, students consider the applicability of the anthropological perspective to specific human issues. Note: Centers on the critical examination and discussion of presentations made by department faculty and graduate students. Note: this course assumes that students have completed course work equivalent to a minor in anthropology. Prereq: Junior standing or higher. Cross-listed with ANTH 5810. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 4840 - Independent Study**

Directed study based on a specific subfield of anthropology. Note: Permission of instructor required. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **ANTH 4995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 9

### **ANTH 5000 - Special Topics in Anthropology**

Designed to give students a chance to evaluate critically some practical or theoretical problem under faculty supervision and to present results of their thinking to fellow students and instructors for critical evaluation. Prereq: Permission of instructor. Restriction: Restricted to Anthropology graduate students. Cross-listed with ANTH 4000. Repeatable. Max hours: 9 Credits. **Semester Hours:** 1 to 6

### **ANTH 5014 - Medical Anthropology: Global Health**

This course is concerned with the underlying biological and cultural determinants of health throughout the human life cycle in global and cross-cultural perspective. Note: The first of a two-course sequence in medical anthropology and global health studies; the second is ANTH 5024. Prereq: Graduate standing. Cross-listed with ANTH 4010. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5030 - Ethnobiology**

Considers the relationship between human society and plants and animals in the natural world. Primary focus on the perception and cognitive organization of the environment and how that

affects the definition and use of plants and animals as resources. Note: this course assumes that students have completed introductory coursework in anthropology and/or biology. Prereq: Graduate standing. Cross-listed with ANTH 4030. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5040 - Anthropology of Food and Nutrition**

Examines the myriad relationships between food as a biological necessity and eating as a socially and culturally conditioned activity. Takes a biocultural perspective that considers not only the tremendous variety of foods we eat, but also the complex meanings and importance attached to food and eating. Note: this course assumes that students have completed an introductory course in anthropology. Prereq: Graduate standing. Cross-listed with ANTH 4040. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5053 - Quantitative Methods in Anthropology**

Surveys the ways of deriving meaning from anthropological data by numerical means, including, but not confined to basic statistical procedure. Note: this course assumes that students have completed a college-level algebra course. Prereq: Graduate standing. Cross-listed with ANTH 4050. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5060 - Evolutionary Medicine**

Evolutionary medicine is a relatively new approach for understanding patterns of human health and disease. In this course, students will learn how human evolutionary history has shaped our susceptibility and resistance to both chronic and infectious diseases. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4060 and PBHL 4060. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5070 - Culture of Development and Globalization**

Anthropological critiques of development and globalization point out that they have occurred without regard for the diversity of human culture and human need. Beginning with this analysis, this course goes one step further by examining culture and values of development and how they affect the way development gets done. Note: students should consult with the instructor prior to enrolling in this course. Prereq: Graduate standing. Cross-listed with ANTH 4070. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5080 - Global Health Practice**

A travel-study course that provides students the opportunity to work on global health issues in the context of a supervised internship experience. In addition to a formal internship placement or directed research opportunity, students attend formal lectures and participate in seminars devoted to addressing those health issues most relevant to the country in which the course is

being taught. Note: this course assumes that students have completed HBSC/ANTH 4010/5014, HBSC/ANTH 4020/5024, HLTH 6070 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4080 and PBHL 4080. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5090 - Drug Syndemic**

Psychotropic drugs, both legal and illicit, are a predominant part of our everyday lives. This course examines their use and meaning within cultures, and the social, political and economic issues that surround their production, use and misuse. Note: this course assumes that students have completed an introductory course in cultural anthropology. Prereq: Graduate standing. Cross-listed with ANTH 4090 and PBHL 4090. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5121 - Zooarchaeology**

Introduction to the theory and methods of zooarchaeology through lectures, readings, and hands-on lab work identifying and analyzing mammalian skeletal material. Students will learn what mammalian remains indicate about biological and cultural evolution of humans. Cross-listed with ANTH 4121. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5150 - Human Biocultural Adaptability**

The chief concern of this course is the relationship between ourselves and our surroundings and the very immediate ways the environments in which we live affect us. The view is of ourselves as a part of, not apart from, these environments. Note: this course assumes that students have a background in cultural anthropology. Prereq: Graduate standing. Cross-listed with ANTH 4150. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5170 - Culture and the Environment**

Examines the historical origins of Western and non-Western ideas of the environment and the place of people within it. The imposition of Western ideas on non-Western groups regarding environmental policy is also examined, with special attention given to practices of conservation, development and transnational monetary policy. Note: this course assumes that students have completed ANTH 2102 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4170. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5180 - The Nature of Power**

Introduces the major theories of power used in contemporary anthropology, with an emphasis on cross-cultural perspectives. Explores how power is defined, determined and exercised globally and locally and how different systems of power articulate with one another. Note: this course assumes that students have completed ANTH 2102 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4180. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5200 - Gender in Cross-Cultural Perspective**

A comparative analysis of gender-based status and social roles of women and men, with women's status and roles emphasized due to their near-universal construction as the "other" sex. Examines, in cross- and sub-cultural context, the relations among women's status and their subsistence and reproductive activities; and the division of labor by sex, ideology and political economy. Prereq: Graduate standing. Cross-listed with ANTH 4200. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ANTH 5230 - Anthropology and Community Based Participatory Research**

The seminar explores anthropological critiques, knowledge production and multi-media approaches to community based participatory research (CBPR) such as photovoice and digital storytelling to understand the history of CBPR and analyze partnerships between university researchers and community representatives. Prereq: Graduate standing. Cross-listed with ANTH 4230. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5260 - Human Reproductive Ecology**

Considers the determinants of fertility variation within and among traditional human societies. Biocultural and ecological perspectives on pubertal timing, marriage patterns, birth seasonality, duration of birth intervals and reproductive senescence. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4260. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5270 - Anthropology of the Body**

Explores how society, through culture, creates collective and individual bodies; embodied experience across the life course; and the body as an expression of social power, bodily modification and adornment. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ANTH 4270. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5290 - Anthropology and Public Health**

This course critically explores anthropological approaches to public health problems. Through a number of key issues and case studies, we examine how public health practice can be enhanced through anthropological research, theory and methodology. Prereq: Graduate standing. Cross-listed with ANTH 4290. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5300 - Migrant Health**

This course examines health issues associated with transnational migration from an anthropological point of view. Drawing upon case studies, we examine the health of migrant

communities in both host and sending nations. Prereq: graduate standing. Cross-listed with ANTH 4300. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5320 - Archaeology of Mexico and Central America**

Surveys the major prehistoric and protohistoric cultures and societies of that area of Mexico and Central America identified with the evolution of Meso-American civilization. Major topics include early human colonization of the Americas, the domestication of plants and animals, the emergence of regionally-based cultures and societies, trade and exchange and the evolution of urbanism and the state. Primary emphasis on such ancient cultures and societies as those of the Olmec, Zapotec, Maya, Teotihuacan, Toltec and Aztec. Note: this course assumes that students have completed an introductory archaeology course. Prereq: Graduate standing. Cross-listed with ANTH 4320. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5330 - Lithic Analysis**

Examines the theoretical basis and methodological tools used by archaeologists in the analysis of prehistoric stone tools. Topics of discussion include the mechanics of stone fracture, typologies, use wear analysis and core reduction techniques. Note: this course assumes that students have completed ANTH 1302 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4330. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5350 - Anthropology of Globalization**

This course provides an overview of anthropological contributions to the study of globalization. Particular attention is devoted to: transformations in global capitalism, state and immigration policy, transnational families, health and transnationalism. Note: previous coursework in anthropology is strongly recommended for success in this course. Prereq: Graduate standing. Cross-listing ANTH 4350. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5380 - Archaeology of Hunters-Gatherers**

Explores the theory and methods used by archaeologists to investigate prehistoric hunter gatherers. Topics of concern include mobility, subsistence, procurement, and socio-political organization. Note: this course assumes that students have completed ANTH 1302 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4380. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5400 - Archaeology of Power and Inequality**

Addresses inequality and power through a long-term archaeological and theoretical perspective. Discusses explanations for the origins of power and inequality and their role in early small-scale societies and emerging complex politics. Note: this course assumes that

students have completed ANTH 1302 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4400. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5440 - Museums in the 21st Century**

This is an advanced course on natural history/anthropology museums. It will examine practical issues facing museums, and consider the complex questions that museums raise. The class includes lectures, discussions, and hands-on collection work, and exhibit/ outreach development. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ANTH 4440. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5450 - Development and Conservation: Contemporary Issues**

Applies the theoretical paradigms of political ecology to contemporary issues of sustainable development. Case studies are chosen illustrating topics based on faculty expertise and student interaction. The first part of the course presents theoretical perspectives relevant to the chosen topic. In the second half, students participate in directed problem solving activities. Note: this course assumes that students have completed ANTH 4070 and 4170 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4450. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5460 - Development and Conservation: Theory and Practice**

Examines the praxis of anthropological knowledge of human ecosystem interaction and development of economic opportunities. Issues of biodiversity, resource conservation, sustainable development and globalization are studied. Note: this course assumes that students have completed ANTH 5450. Prereq: Graduate standing. Cross-listed with ANTH 4460. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5500 - Advanced Issues in Human Evolution**

This flexible course offers an advanced treatment of issues in human biological evolution. Topics may emphasize morphological evolution, behavioral evolution, the environment of human evolution, non-human primate comparative information. Prereq: Graduate standing. Cross-listed with ANTH 4500. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5530 - Anthropological Genetics**

An advanced survey of molecular and population genetics and their applications in anthropology. Topics vary, including but not limited to: genetic epidemiology, genetic distance studies, behavioral genetics, developmental genetics, sociobiology, and use of mitochondrial DNA to reconstruct population histories. Emphasis is on applications of new technology and methodology, as well as new genetic paradigms replacing classical models of genetic causation. Note: this course assumes that students have completed undergraduate coursework in



biological anthropology or genetics. Prereq: Graduate standing. Max Hours: 3 Credits.  
**Semester Hours:** 3 to 3

### **ANTH 5550 - Primate Comparative Anatomy**

Examines human and non-human primate anatomical diversity. Students learn primate anatomy and the morphological differences among species. Explanations for the evolutionary origins of differences are reviewed, focusing on evolutionary theory, comparative methods and biomechanics. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4550. Max Hours: 3 Credits.  
**Semester Hours:** 3 to 3

### **ANTH 5560 - Human Ecology**

Studies demographic and ecological variables as they relate to human populations. Aspects of natural selection, overpopulation and environmental deterioration are considered. Note: this course assumes that students have a background in biological or physical anthropology. Prereq: Graduate standing. Cross-listed with ANTH 4560. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5570 - Landscape Archaeology**

Introduces spatial archaeology through intrasite analysis and regional studies. Methods treated include site location and quantitative spatial organization. Theoretical topics include definitions of community, ancient urbanism and the impact of subsistence and politics on relations to the landscape. Note: this course assumes that students have completed ANTH 1302 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4570. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5580 - Neanderthals and the Origin of Modern Humans**

Focuses on the human fossil record for the taxon *Homo sapiens*, including the earliest members of this group ("early" or "Archaic" *Homo sapiens*), the Neanderthals and so-called "Anatomically modern" *Homo sapiens*. The goal of the course is to survey the major issues within the area of modern human origins, and to learn about the evolutionary relationships, lifeways and behaviors of these groups. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4580. Max hours: 3 Credits.  
**Semester Hours:** 3 to 3

### **ANTH 5590 - Primate Behavior**

Studies nonhuman primate behavior with emphasis on understanding social behavior, ecology and issues related to human evolution. Note: this course assumes that students have

completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4590. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5600 - Medical Anthropology**

Introduces students to the theories and concepts of medical anthropology, the study of human health and illness. Explores conceptions of the body, modalities of healing, the clinical encounter, and new medical technologies. Prereq: Graduate standing. Cross-listed with ANTH 4600. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5640 - Darwinian Approach to Human Behavior**

The evolution of human behaviors from a Darwinian perspective, focusing on the natural selection of behaviors that maximize reproductive success. Includes topics such as male and female reproductive strategies, female mate choice, male violence and resource acquisition and control. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4640. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5800 - Special Topics in Medical Anthropology**

Seminar series on current issues in medical anthropology. Faculty offer a range of different courses, including the political economy of drugs, health and human rights, and reproductive health. Prereq: graduate standing. Repeatable. Cross-listed with ANTH 4800. Max hours: 9 Credits. **Semester Hours:** 3 to 9

### **ANTH 5810 - Integrating Anthropology**

Designed to build on specialized course work in the subdisciplines of anthropology, this course emphasizes the basic concepts that integrate and unite the discipline and give it unique perspective. These are the concepts of culture, adaptation and human evolution. In the last several weeks of the course, students consider the applicability of the anthropological perspective to specific human issues. Note: Centers on the critical examination and discussion of presentations made by department faculty and graduate students. Restriction: Restricted to Anthropology graduate students. Cross-listed with ANTH 4810. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 5840 - Independent Study**

Directed study based on a specific subfield of anthropology. Prereq: Permission of instructor required. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

### **ANTH 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **ANTH 5910 - Field Experience in Archaeology**

Students participate in archaeological field research and data recovery and conduct laboratory analysis of materials recovered in the field. Emphasis is placed on excavation technique and accuracy of record keeping. Note: this course assumes that students have a background in archaeology. Prereq: Graduate standing. Cross-listed with ANTH 4910. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 6

### **ANTH 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **ANTH 5995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Max hours: 9 Credits. **Semester Hours:** 3 to 9

### **ANTH 6000 - Seminar in Current Research Topics**

An inquiry into current research of critical and general interest to anthropologists. Variable format. Note: students should receive permission from the instructor prior to registering for this course. Prereq: Graduate standing. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **ANTH 6040 - Advanced Topics in Medical Anthropology**

A flexible seminar format for dealing with topics of special interest in medical anthropology on an advanced graduate level. Topics to be considered vary from semester to semester. Examples include high altitude adaptation, anthropological perspectives on substance abuse, epidemiology, environmental and occupational health, the health consequences of cultural change and cross-cultural psychiatry. Note: Topics vary from semester to semester. Note: students should receive permission from the instructor prior to registering for this course. Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 4

### **ANTH 6041 - Human Genetics: Legal, Ethical and Social Issues**

Examines legal, ethical and social issues that have come about with advances in human genetics. Topics include privacy, informed consent, discrimination, forensics, medical malpractice and property rights. Prereq: Graduate standing. Cross-listed with HBSC 6320 and 7320. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 6063 - Qualitative Research Design and Methods**

Much of the data collected in the social sciences is interview and text-based. This course explores methods for collecting and analyzing these data and theoretical paradigms that underlie these methods. Restriction: Restricted to Anthropology graduate students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 6103 - Current Theory in Ethnography**

An in-depth inquiry into important theories in cultural anthropology through extensive primary source reading. Practice in formulating theory, critical thinking and theoretical writing are emphasized. Note: First course in a two-course required graduate sequence. Note: this course assumes that students have completed undergraduate coursework in cultural anthropology. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 6133 - Anthropological Perspectives on Language**

An intensive introduction to linguistic anthropology. Following a brief survey of technical linguistics, focus is on: the roles of language in society; multilingualism; language and identity; language and worldview; language, gender, class and power; language as social action; and other topics. Students carry out investigations based on models from their reading, as well as responding to the theoretical approaches of the field. Note: this course assumes that students have completed undergraduate coursework in cultural anthropology. Prereq: Graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 6307 - Contemporary Perspectives in Archaeology**

Explores contemporary theoretical methodological perspectives in archaeology. Structured to proceed from a survey of the history of archaeological thought based on recent retrospectives, to an analysis of works reflecting current perspectives and directions. Topics include: archaeological interpretation, classical versus scientific archaeology, versus culture-history, functionalist and materialist paradigms, ethno-archaeological and text-based studies, neo-evolutionism, interactionist models, Marxist perspectives, processual theory. Note: this course assumes that students have completed undergraduate coursework in archaeology. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 6317 - Archaeological Research Design and Analysis**

Examines the methods and techniques used in archaeology, including theory-building, hypothesis testing and middle range theory. Core materials emphasize the learning and critique of basic archaeological assumptions and the methods and theories used to scrutinize the collection and interpretation of data. Topics include chronometric applications and paleo-environmental reconstruction. Note: this course assumes that students have completed ANTH 6307 or equivalent. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 6503 - Biological Anthropology Core: The Fossil Record**

Examines the historical development and modern practice of biological anthropology, including the theoretical and methodological foundations of this field. Emphasis is placed on the evidence for human and non-human primate evolution and the processes that influenced this evolution. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 6513 - Biological Anthropology Core: Modern Human Variation**

Considers the theory and methods used in investigations of biological variation in contemporary human populations. This includes the biological and cultural sources responsible for creating and maintaining contemporary variation as well as their functional consequences. Methods of research design and how to write a grant and scientific articles are considered. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ANTH 6520 - Seminar: Selected Topics in Physical Anthropology**

A flexible seminar format for dealing with topics of special interest in physical anthropology on an advanced graduate level. Topics vary from semester to semester. Examples include: anthropology of nutrition, paleoecology, primate evolution, field experience in paleontology, advanced osteology and advanced human ecology. Note: This course assumes that students have completed undergraduate work in biological/physical anthropology. Prereq: Restricted to Graduate and Graduate Non-Degree students. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **ANTH 6840 - Independent Study: ANTH**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **ANTH 6950 - Master's Thesis**

Term offered: fall, spring, summer. Max hours: 6 Credits. **Semester Hours:** 1 to 6

## **Arabic**

### **ARAB 1000 - Introduction to Cultures of the Arabic-Speaking World**

Introduces students to the Arabicspeaking cultures of North Africa, some Asian countries, and the Gulf States, with a focus on politics, culture, economics, literature and the arts. Taught in English. Term offered: spring, fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARAB 1010 - Beginning Arabic I**

Beginning course in Modern Standard Arabic (MSA) designed for students who have not had any experience with the language. Term offered: spring, fall. Max Hours: 5 Credits. **Semester Hours:** 5 to 5

### **ARAB 1020 - Beginning Arabic II**

Beginning course in Modern Standard Arabic (MSA) designed for students who have not had any experience with the language. Note: This course assumes that students have passed ARAB 1010 or equivalent, or have taken one year of high school Arabic, or possess equivalent proficiency. A grade of C- or higher in ARAB 1010 is recommended for success in this course. This course is not intended for native speakers. Term offered: spring. Max hours: 5 Credits. **Semester Hours:** 5 to 5

### **ARAB 2110 - Intermediate Arabic I**

Third-semester course in Modern Standard Arabic (MSA) designed for students who have had two semesters or comparable proficiency in the language. Note: This course assumes that students have passed ARAB 1020 or equivalent, or have taken two years of high school Arabic, or possess equivalent proficiency. A grade of C- or higher in ARAB 1020 is recommended for success in this course. This course is not intended for native speakers. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARAB 2120 - Intermediate Arabic II**

Fourth-semester course in Modern Standard Arabic (MSA) designed for students who have had three semesters or comparable proficiency in the language. Note: This course assumes that students have passed ARAB 2110 or equivalent, or have taken three years of high school Arabic, or possess equivalent proficiency. A grade of C- or higher in ARAB 2110 is recommended for success in this course. This course is not intended for native speakers. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARAB 2840 - Independent Study**

Independent study for students wishing to pursue nonoffered studies in Arabic language and culture. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **ARAB 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **ARAB 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **Architecture**

### **ARCH 1110 - Introduction to Architecture**

Introduces students to the essential ways of looking at and thinking about buildings, sites and cities, exposing students to the various perspectives, positions and practices that they will encounter in both an architecture curriculum and in architectural practice. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 1710 - Architectural Drawing: Analysis and Representation**

This course explores the development of graphic skills emphasizing drawing as a means to analyze and represent architectural ideas throughout the design process. Using freehand and mechanical drawing methods students will learn the conventions and opportunities of the three architectural projections. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 2110 - Design Studio I**

Introduces students to the principles of design and composition through studies of architecture's formal, spatial, and geometric systems. Students explore these using a variety of drawing techniques including diagramming and drawings that are exploratory, analytical and developmental. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 2230 - Architectural History I**

Introduces architecture and urbanism from prehistory to the mid-seventeenth century by exploring the social, cultural, technical, philosophical and aesthetic ideas that shaped buildings and other architectural and urban settings in different parts of the world. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3110 - Design Studio II**

Introduces students to the expressive potential of architecture's elements and systems. Students explore techniques for translating and expressing ideas in buildings through the static, dynamic and sequential manipulation of architectural form and space. Prereq: ARCH 2110. Restriction: Restricted to undergraduate ARCH students within the College of Architecture and Planning. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **ARCH 3120 - Design Studio III**

Focuses on the design of buildings in their relationship to physical, natural and cultural contexts. Students explore non-formal concepts and translate them into architectural experiences that integrate program, site and climate. Prereq: ARCH 3110. Restriction: Must be an undergraduate Architecture student. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **ARCH 3130 - Construction Practices: Material and Structural Systems**

Provides an overview of the materials, systems, assemblies and processes that inform the design and construction of buildings, reviewing the building technologies and developing student understandings of the interrelationship between the interconnected elements and systems that define buildings and spaces. Prereq: PHYS 2010/2030 and MATH 1130 are recommended. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3230 - Architectural History II**

Introduces architecture and urbanism from the mid-seventeenth century to the present, exploring the forces that shaped buildings and other architectural and urban settings in different parts of the world. Prereq: ARCH 2230. Restriction: Open to all undergraduate majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3330 - Building Systems I**

Introduces the concepts of thermal behavior of buildings, climate as a determinant of building design, energy use in buildings, natural and mechanical means of environmental control, plumbing, electrical, communication systems, water supply and sanitation systems. Recommended Prereq: MATH 1130 OR MATH 1110 & 1120; PHYS 2010/2030 OR PHYS 2311/2321. Restriction: Restricted to undergraduate ARCH students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3340 - Theory of Structures I**

Introduction to the analysis and design of structural elements and focuses on the principles of statics and the strength of materials. Topics include stress determination, deflection and the behaviors of tension, compression and shear in various structural elements. Recommended Prereq: MATH 1130 OR MATH 1110 & 1120; PHYS 2010/2030 OR PHYS 2311/2321. Restriction:



Restricted to undergraduate ARCH students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3430 - Construction Practices: Building Envelope**

Discusses the principles and processes of building construction and introduces the major systems and assemblies that inform construction practices. Stresses the relationship between architectural concepts and emerging building technologies, teaching students how to select appropriate materials, systems and assemblies. Prereq: ARCH 3130. Restricted to sophomore standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3600 - Special Topics Cultural**

Special topics in architecture studies related to cultural inquiries including theory, cultural diversity, and/or cross cultural thinking. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ARCH 3601 - History of American Architecture**

This course investigates the history of architecture in the United States as a chronological survey of buildings, architects, landscapes, and urban forms and as an exploration of the social, political, economic, technological, and similar issues that inform this built environment. Prereq: ARCH 2230 and 3230. Restriction: Restricted to undergraduate ARCH students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3602 - Architecture Photography**

Architecture elective in photography of space, interior, and exterior with an emphasis on design composition of architecture. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3603 - Modern Architecture**

Examination of that period in architecture called the Modern Movement, its proponents and its influence on the design of buildings today. Extensive readings and writings required. Prereq: ARCH 2230. Restriction: Restricted to Sophomore standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3690 - Cultural Research Abroad**

Topics in architecture studies related to cultural inquiries including theory, cultural diversity, and/or cross cultural thinking in other cultures. Work shall include preparation in culture, history and language skills in other countries. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **ARCH 3691 - Cultural Design Abroad**

Design topics in architecture studies related to cultural inquiries including design, cultural implications of design, and/or cross cultural application of design. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **ARCH 3692 - International: Project Delivery**

This course is the delivery of the design solution developed in ARCH 3703. Critical thinking skills will be honed as students respond to construction material and technology limitations during the 10 day build in a South American cultural setting. Prereq ARCH 3703. Restriction: Restricted to undergraduates with a Junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3693 - Rome: Architecture & Urbanism**

The objective of this course is to provide a broad overview of the city's major architectural sites, topography, infrastructure and systems of urban design and organization through the study of the rich palimpsest of buildings, piazzas and landscapes from antiquity to the present day. Coreq. ARCH 3694 Restricted to undergraduate BS-ARCH students with Junior standing or higher. Cross-listed with ARCH 6755. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3694 - Rome: Documentation, Analysis and Design**

With graphic representation as the primary mode of inquiry, this course is an intensive study of a single building, piazza or landscape within the rich urban fabric of Rome. The graphical inquiry will be supported by pre-departure research and onsite observation and presentations. Coreq: ARCH 3693. Restricted to undergraduate BS-ARCH students with Junior standing or higher. Cross-listed with ARCH 6760. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3700 - Special Topics Design**

Special topics in architecture studies related to design inquiries including theory, design skills, and/or analytical thinking. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ARCH 3701 - Survival Sketching**

The focus of this course will be the sketchbook and the keeping of a sketchbook. Restriction: Restricted to undergraduate ARCH students within the College of Architecture and Planning with sophomore standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3702 - Design Thinking**

Students will be introduced to tools that will enable them to reframe design dilemmas in favor of productive resolutions. Course content will include examples and specific techniques of design thinking, including empathy, abductive reasoning, testing, plussing and diagramming. Prereq: sophomore standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3703 - International: Design in Context**

The course is a project-based design seminar. In collaboration with a small community in Central America, students have the opportunity to engage in the context of another culture, environment, construction limitations and economic constraints. The course integrates architecture, engineering, and business. Restriction: Restricted to ARCH-BS majors with Junior standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3704 - The Poetic Detail-Studies in Tectonics—Wood**

This research seminar focuses on tectonics through traditional timber frame and wood construction case studies. The relationship between function, aesthetics, detail, and tectonics are explored in relation to contemporary concerns. Learning by making. Cross-listed with ARCH 6357. Restriction: Restricted to ARCH-BS majors with sophomore standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3705 - Human Centered Design, Innovation and Prototyping**

Introduces techniques for collaborative design by interdisciplinary teams: design thinking, problem solving, and rapid prototyping. Teams of students design and implement increasingly complex projects while acquiring essential innovation and problem-solving skills. The course will culminate in a final project chosen by each team. Cross-listed with IWKS 2100. Restriction: Restricted to ARCH-BS majors with sophomore standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3706 - 3D Design, Computation, and Prototyping**

Introduces the design and computer-controlled fabrication of three-dimensional objects using both additive (3D printing) and subtractive (laser cutter, CNC router/mill) processes. Various commercial and open-source software tools for 3D design (CAD), manufacturing (CAM) and visualization will be explored. Increasingly complex projects throughout the semester will be used to illustrate fabrication techniques. The course will culminate in a final project. Restriction: Restricted to ARCH-BS majors with sophomore standing. Cross-listed with IWKS 3100 and 5170. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3707 - Color Theory + Application**

This course will explore Color perception and theory; media/medium technique/application and landscape/built-environment drawing preparation, composition and presentation. The

objective is to develop your understanding of color interaction and interrelationship especially, as it pertains to the use of color in the design and implementation of the built environment. Restriction: Restricted to ARCH-BS majors with sophomore standing. Max Hours: 3 Credits

**Semester Hours:** 3 to 3

### **ARCH 3708 - Introduction to the Essentials of Biomimicry**

Biomimicry is the conscious emulation of nature's genius that can be applied to the fields of design, engineering, medicine, transportation, and social interaction. This class will be geared towards designers and will give an overview of the discipline, the (3) Essential Elements, the human-nature connection, The Biomimicry Thinking Methodology, and Life's Principles.

Restriction: Restricted to ARCH-BS majors with sophomore standing. Max Hours: 3 Credits

**Semester Hours:** 3 to 3

### **ARCH 3709 - Furniture Design**

Students learn how to design and build furniture in the College's woodshop. Topics include ergonomics, properties of materials, principles and techniques of joinery and techniques of hand and machine tools. Cross-listed with ARCH 6180. Restriction: Restricted to ARCH-BS majors with sophomore standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3800 - Special Topics - Technical**

Special topics elective will include coursework in either Digital Media In Design courses, Design-Build site Construction, or the Science and Art of Engineering Buildings. Additional topics will be develop in conjunction with the required undergraduate technical electives. Restriction: Must be an undergraduate Architecture student with sophomore standing or higher. Repeatable.

Max Hours: 12 Credits. **Semester Hours:** 3 to 3

### **ARCH 3801 - Introduction to Digital Media**

Introduces Building Information Modeling (BIM) systems as a means to integrate and optimize design processes and building systems in the professional practice of architecture. Topics include creation of simulated, complex, three-dimensional environments in support of the architectural design studio sequence. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3802 - Arch Project Presentation**

Architecture elective in digital and analog methods of presentation and composition for various audiences and formats. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3804 - Green Tech Eco-Furniture Fabrication I**

Green Tech I is the first of two courses that are a "real build" course in which students advance their knowledge of environmental design through full-scale construction of architectural elements, furnishings, accessories, finishes, outdoor gear, or even clothing. Restriction: Restricted to ARCH-BS majors with sophomore standing or higher. Coreq: ARCH 3806. Cross-listed with ARCH 6375. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3805 - Beginning Revit**

Introduction to Building Information Modeling through Autodesk's Revit Architecture software. The course explores fundamental architectural concepts as they are developed and expressed in Revit. Appropriate program use and team learning experiences are emphasized. Prereq: ARCH 3110 and 3130. Restriction: Restricted to ARCH-BS majors with sophomore standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3806 - Green Tech Eco-Furniture Fabrication II**

Green Tech II is the second of two courses that are a "real build" course in which students advance their knowledge of environmental design through full-scale construction of architectural elements, furnishings, accessories, finishes, outdoor gear, or even clothing. Restriction: Restricted to ARCH-BS majors with sophomore standing or higher. Coreq: ARCH 3804. Cross-listed with ARCH 6376. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3807 - Small Eco Home Design & Fabrication**

This unique, quick-paced seminar focuses on small-scale residential design, from tiny-homes, to prefab, and movable residences. Students learn Small Home design, methods, and technologies, then using green materials, they design and fabricate architectural elements and furniture for enhancing small-scale living. Restriction: Restricted to ARCH-BS majors with sophomore standing. Cross-listed with ARCH 6377. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3808 - Architectural Design and Fabrication**

This course explores architectural production using advanced 3D-modeling, fabrication, and construction documentation techniques. The course connects contemporary design practice with material experimentation and architectural production. Prereq: ARCH 3801. Restriction: Restricted to ARCH-BS majors with sophomore standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3809 - Architectural Design and Graphics**

This course explores the varied mediums of graphic representation in architecture. Using advanced tutorials in 3D-modeling, computer-generated rendering, and workflows through multiple software platforms, students will create work that is reflective of contemporary

architecture culture. Prereq: ARCH 3801. Restriction: Restricted to ARCH-BS majors with sophomore standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 3949 - Internship I**

Experiential learning student internships sponsored by faculty in a field related to architecture. Minimum of 45 work hours per credit. Prereq: Permission of instructor, advisor and acceptance in BS Architecture program. Must also have sophomore standing. Minimum 15 credit hours with 2.75 GPA. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **ARCH 4110 - Design Studio IV**

Design Studio IV. Introduces students to analysis and design as complementary processes. Students learn how to form design intentions based on analytical research and close study of the relationship between architecture, precedent and culture, and to consider buildings as settings that address issues of culture, society, economy and ecol. Prereq: ARCH 3120. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **ARCH 4120 - Design Studio V**

Explores the place and role of architecture as an instrument of critical social engagement and cultural change, the role of history and precedent in the design process, and the role of detail through projects that demonstrate student's proficiency as designers. Prereq: ARCH 4110. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **ARCH 4340 - Theory of Structures II**

Focuses on the relationship between architectural concepts and the selection of structural systems. Addresses the qualitative and quantitative analysis of reinforced concrete, steel, and wood structural systems and members. Prereq: ARCH 3340. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 4440 - Building Systems II**

Focuses on the environmental systems in commercial and other nonresidential buildings. Discusses natural and artificial lighting, HVAC systems, acoustics, vertical transportation and fire protection. Recommended Prereq: MATH 1130 OR MATH 1110 & 1120; PHYS 2010/2030 OR PHYS 2311/2321. Restriction: Restricted to undergrad ARCH students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 4840 - Independent Study**

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to architecture. Prereq: Restricted to undergraduate ARCH

students within the College of Architecture and Planning with sophomore standing or higher. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **ARCH 4949 - Internship II**

Experiential learning student internships sponsored by faculty in a field related to architecture. Minimum of 45 work hours per credit. Permission of instructor, advisor and acceptance in BS Architecture program. Must also have sophomore standing. Minimum 15 credit hours with 2.75 GPA. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **ARCH 5000 - Math and Physics for Architects**

Provides the review of mathematics and physics. This is a prerequisite for the graduate technology courses. Does not count toward the required credits for the MARCH degree. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 5110 - Design Studio I**

The first of two elemental design studios focused on on the language of design, organizational and spatial systems and principles as well as on analog and digital methods of visualizing architectural ideas and forms. Restriction: Restricted to Graduate Architecture students within the College of Architecture and Planning. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **ARCH 5120 - Design Studio II**

The second of two elemental design studios focused on translating organizational and spatial systems, principles and concepts into architectural systems. Through a number of small scaled design exercises students learn how organizational and spatial systems can be leveraged in the design of their buildings. Prereq: ARCH 5110 and ARCH 5510. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **ARCH 5130 - Design Studio III**

The first of the two analytical design studios addresses how design ideas are formed through the analysis of the program in terms of action and perception and how to transform those ideas into formal strategies and specific architectural experiences. Prereq: ARCH 5120. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **ARCH 5140 - Design Studio IV**

The second of the two analytical studios will build upon ideas developed in the previous studio concerning how the analysis of the program in terms of action and perception inform the

formal strategies and the design of specific architectural experiences. Prereq: ARCH 5130. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **ARCH 5210 - Introduction to Architecture**

Introduces important ways of looking at architecture and acquaints students with the various perspectives that they will later find in the rest of the curriculum. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 5220 - History and Theory Architecture I**

Introduces world architecture and urbanism from prehistory to the Italian Renaissance. The course helps students understand the various cultural, technological, philosophical, and aesthetic ideas that helped shape buildings through history. Buildings and settlements on all continents and in all of the major world cultures are discussed. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 5230 - History and Theory Architecture II**

Examines world architecture and urbanism from the Italian Renaissance to the present. Helps students understand the various cultural, technological, philosophical and aesthetic ideas that helped shape buildings through history. Buildings and settlements on all continents and in all of the major world cultures are discussed. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 5310 - Building Construction I**

The first of a two-course sequence that provides an overview of the structure, systems, assemblies and processes that make a building. Provides a broad view of building technology and an understanding of the interrelationship of all the parts. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 5320 - Building Construction II**

This course focuses on principles and processes of building construction, and introduces major constructional systems. It stresses the relationship between architectural concepts and building technology and assemblies. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 5330 - Sustainable Systems I**



The first course in the sustainable systems sequence introduces concepts and design methods of energy-efficient environmental control in buildings including thermal and moisture loads, heating, ventilation and air conditioning equipment and systems, and active and passive thermal strategies. Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 5340 - Sustainable Systems II**

The second course in the sustainable systems sequence introduces concepts and design methods of plumbing, power distribution, renewable electricity, artificial illumination, daylighting, acoustics, vertical transportation, fire protection, and telecommunication systems in buildings with a focus on energy and resource efficiency. Prereq: ARCH 5330. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 5350 - Structures I**

The first course in the structures sequence introduces the analysis and design of structural elements and focuses on the principles of statics and the strength of materials. Topics include stress determination, deflection and the behaviors of tension, compression and shear in various structural elements. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 5360 - Structures II**

Focuses on the relationship between architectural concepts and the selection of structural systems. Addresses the qualitative and quantitative analysis of reinforced concrete, steel and wood structural systems and members. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 5410 - Professional Practice**

Introduces the essential elements of professional practice through topics such as internship, licensing, services, modes of practice, fees, marketing, documents, specification and production procedures. Examines traditional and emerging forms of practice. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 5420 - BIM: Principles & Practices**

Introduces basic aspects of building information modeling (BIM) concepts, software, development, management and delivery for architectural projects. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ARCH 5430 - Social Context of Design**

Focuses on the ethical, social, cultural and psychological principles, which people bring to the perception and design of the built environment. Its major topics include: ethical values; cultural patterns and values; social, cultural and personal ritual; and pre-design and programming.

Prereq: Graduate ARCH students only. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ARCH 5450 - Sustainable Design Practices**

This course explores sustainable principles and practices as it relates to the design, construction of both the building and its site. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ARCH 5510 - Architectural Graphics**

This course explores the development of graphic skills emphasizing drawing as a means to design. It includes investigation of drawing types and methods; diagramming of ideas and systems; informative, exploratory and developmental sketching. Restriction: Restricted to Graduate Architecture students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ARCH 6150 - Design Studio V**

The first of two reflective studios will assume reflective/critical stance towards programmatic issues or rather cultural presuppositions and critically explore the ways in which architecture can play a critical as well as an affirmative role within the broader cultural context. Prereq: ARCH 5140. Coreq: ARCH 6151. Max hours: 6 Credits. **Semester Hours:** 6 to 6

## **ARCH 6170 - Design Studio VI**

This is the second of two reflective studios, which focuses on the comprehensive design of an architectural project including considerations of structural systems, environmental systems, life safety concerns, regulatory considerations, wall sections, building assemblies and significant detail. Prereq: ARCH 6150. Coreq: ARCH 6171. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 6 to 6

## **ARCH 6171 - Integration Seminar**

In this seminar students will develop and document the technical aspects of their Design Studio VI design projects including, life safety, mechanical, electrical, plumbing, conveyance, accessibility systems and material assemblies. Prereq: ARCH 6150, ARCH 6151. Coreq: ARCH 6170. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

## **ARCH 6180 - Furniture Design**

Students learn how to design and build furniture in the College's woodshop. Topics include ergonomics, properties of materials, principles and techniques of joinery and techniques of hand and machine tools. Cross-listed with ARCH 3709. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ARCH 6185 - Digital Design & Fabrication**

An introductory class to Computer Aided Design (CAD) and Computer aided manufacturing (CAM). Students explore how these technologies apply to the field of architecture with a focus is on parametric/algorithmic design approaches and mass customization manufacturing techniques. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6190 - Special Topics in Design Studies**

Various topics in design, according to current faculty and student interests. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ARCH 6195 - Aspen Summer Workshop**

Three weeks with three world class architecture firms in Roaring Fork Valley. The firms lead students through a unique design project that develops and challenges their observational, conceptual, and visualization abilities. Drawing as a means of seeing, understanding and creating dominates the process/ethic of the course. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ARCH 6205 - Urban Housing**

This course examines housing trends and patterns; supply and demand factors; housing policies; housing challenges (e.g., inequitable distribution, special needs, segregation/discrimination, and homelessness); sociological, demographic, and economic considerations; and the roles of planners and the public and private sectors. Cross-listed with LDAR 6755 and URPL 6405. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6210 - History of American Architecture**

Examines the history of American architecture from prehistoric times to the present, mainly within the geographical borders of the present-day United States. Helps students understand the various cultural, technological, philosophical and aesthetic ideas that helped shape American buildings. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ARCH 6212 - History of Modern Architecture**

Examines the various theories, accomplishments and ideals of modern architecture in the 20th century. Issues include the relationship between theory and practice, architecture and ideology, technology, abstraction and representation, functionalism and formalism, utopianism and social responsibility. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ARCH 6220 - History of Architectural Theory**

Investigates the history of architectural theories in the West from antiquity to the present. Explores the various ideas that have been proposed to explain or to direct architectural design and examines the relationship between the theories and the buildings themselves. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ARCH 6222 - Contested Terrains**

Explores the different processes, factors and forces and determines and influences occupation, land use and built form through the phenomena of conflict and contestation. Design is inherently located within the disputes and discourses involving landscape as location and resource. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ARCH 6230 - Preservation Theory and Practice**

The practice of historic preservation has evolved in a specific policy context. This introductory course introduces basic American institutions and laws associated with preservation as well as standards, definitions, and practices associated with these. Cross-listed with HIPR 6010. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ARCH 6231 - Regionalisms & the Vernacular**

This class explores the history of the built environment from the perspective of evolutionary change; peoples attempting to meet utilitarian needs, respond to environmental forces, societal expectations, and aesthetic aspirations through design. The course looks closely at vernacular structures in a global context. Cross-listed with HIPR 6110. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ARCH 6232 - Reading the City**

Design and planning professionals, including preservationists, must learn to work in environments with which they have had little previous knowledge. This course emphasizes gaining understanding of a novel environment and translating that knowledge into a well researched and media savvy professional presentation. Prereq: HIPR 6410 is recommended. Cross-listed with HIPR 6610. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6233 - Historic Buildings in Context**

This course covers the concept of "historic significance" and develops skills in understanding and professionally utilizing this concept. Procedures and skills are introduced. Prereq: HIPR 6010 or permission of instructor. Cross-listed with HIPR 6210. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6240 - History Of The City**

Introduces students to the history of global cities through selected typologies. Explores similarities and differences among cities considered against the larger cultural, political and socio-economic envelope of which they are part. Provides awareness of origins, growth and evolution of urban form. Cross-listed with URBN 6640. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6241 - Studies in Tectonics**

This research seminar focuses on tectonics - the logic of structure & material combinations (wood, metal, stone, masonry etc.). Through case studies, the relationship between function, aesthetics, detail, and tectonics are explored in relation to contemporary architectural concerns. Prereq: HIST I & II. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6254 - Architecture, In Theory**

Explores theories and texts that have influenced the analysis and the production of architectural form. The focus is on the expressive potential of architectural forms and the modalities of the realization of this potential. Cross-listed with DSPL 7016. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6255 - Cultural Institutions**

Selected types of cultural institutions including art museums, libraries, cultural centers, theaters, etc. are studied in this research seminar. Through case studies and readings, their ongoing cultural, architectural and corporate values are examined. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6256 - Community Development**

This course introduces community development, examining planners' and other stakeholders' roles in the field; key theories and practices; community dynamics; community-based organizations; asset-based development; social equity; and the influence of local physical and economic factors on community development. Cross-listed with URPL 6400. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6257 - Community Engaged Design Practice**

Obtain real-world pre-design and conceptual design experience in complex urban environments focusing on evolving trends in sustainability. Using digital trans-disciplinary learning students will develop comprehensive sustainable strategies that draw from their own sustainable philosophy developed during this class. Cross-listed with LDAR 6635 and LDAR 4435. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6258 - Social Justice in Planning**

This course investigates various social justice issues encountered in planning, including conflict resolution; advocacy; environmental justice; social equity; culture and diversity; disadvantaged populations; public engagement techniques; affordability; equal access; and policy impacts. Cross-listed with URPL 6410 and LDAR 6637. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6259 - The Art of Traditional Design**

Introduction to Philosophy, History and Design Methods of Traditional Design derived from Greek precedents developed through the Renaissance and later the Beaux Arts. The course will emphasize this influence on the Architecture of the United States. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6260 - Architectural Precedents**

Explores a number of traditional answers to recurring design issues, such as how to approach and enter a building or how to design a facade. In a seminar setting, students examine traditional ideas for their underlying principles and design new architectural compositions based on those principles. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6270 - Form and Formation of Cities**

This course investigates the origins and types of human settlements; the history of cities and urbanization; urban morphology and the evolution of the built environment; urban form principles and theory; and types of urbanism. Cross-listed with URPL 6350, URBN 6633, and LDAR 5530. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6275 - History Native Amer Arch**

Introduces Native American architecture from the 12th century to the present. The course helps students understand the various cultural, technological, philosophical and aesthetic ideas that helped shape these buildings throughout history. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6290 - Special Topics in Cultural Studies**

Various topics in cultural studies, according to current faculty and student interests. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Repeatable. Max hours: 21 Credits. **Semester Hours:** 3 to 3

### **ARCH 6310 - Greenbuilding Tech**

This seminar will advance the student's knowledge of environmental building and construction methods through studies in material resources, innovative green systems, alternate green technology, energy efficiency, and affordability in "green architectural design." Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6313 - LEED Certification, Greenbuilding Seminar**

This RIGOROUS course will use the LEED Certification process to provide a framework for assessing building performance and meeting sustainability goals, following the 1st step in a two stage Professional Accreditation process, focusing on LEED GA, Green Associate Accreditation. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6314 - LEED AP Advanced Greenbuilding Seminar**

This advanced LEED Certification and Accreditation course builds on the first LEED GA course, providing a framework for assessing green building performance and sustainability goals, exploring advanced green building concepts and preparing the student for the LEED AP BD+C exam. Prereq: ARCH 6313 or instructor approval. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6351 - Building Conservation**

This course emphasizes the relationship between knowledge acquisition, professional judgement, and design modification. Topics include: 1) Historic Building Types & Methods, 2) Field and Lab Methods of Building Assessment, and 3) Management of Building Rehabilitation. The course takes an integrative approach to the scientific, aesthetic, managerial and legal dimensions of preservation. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6352 - Documentation, Analysis, Representation**

This methods course focuses on skills development in in-situ documentation of the historic environment. The course includes modules on: a) historic records, b) archaeological evidence, c) building and site measurement, d) photographic & Photometric methods, e) geo-spatial data, f) graphic representation, and g) reporting formats. Cross-listed with HIPR 6310. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6353 - Daylighting Design**

Daylighting is the use of light from the sky to illuminate building interiors. The objective of this course is to introduce students to the fundamentals of daylighting design including how it is perceived and how it impacts building energy flows. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6355 - Urban Conservation: Context for Reuse**

Human habitats (especially cities) are dynamic. The preservationist cannot freeze cities in a static representation of the past. The course deals with philosophical and political contexts, but emphasizes the role of strategic design intervention in the shaping of evolving cities. Cross-listed with HIPR 6410. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6356 - Adaptive Reuse: Business and Practice**

Existing buildings and infrastructure afford challenges and opportunities for reuse. This course explores the business, and financial aspects of adapting the built environment for contemporary uses. The course is suitable for designers, planners, historians and social scientists. Restriction: Restricted to majors within the College of Architecture and Planning. Cross-listed with HIPR 6220. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6357 - The Poetic Detail-Studies in Tectonics—Wood**

This research seminar focuses on tectonics through traditional timber frame and wood construction case studies. The relationship between function, aesthetics, detail, and tectonics



are explored in relation to contemporary concerns. Learning by making. Cross-listed with ARCH 3704. Restriction: Restricted to ARCH-BS majors with sophomore standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6370 - Introduction To Design Build**

Introduction to Design Build project delivery methods important to architects. Lecture, research on the industry and an individual student project are the methods used to introduce ethical questions, role of the architect, owner, consultant and subcontractors. Work leads to studio project or case study. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6373 - Construction in Design Build**

Using a single project, students fully explore the design phase, estimating, scheduling and project management skills in traditional construction. Course is concurrent with an advanced studio and builds a project on a site. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6375 - Green Tech Eco-Furniture Fabrication I**

Green Tech I is the first of two courses that are a "real build" course in which students advance their knowledge of environmental design through full-scale construction of architectural elements, furnishings, accessories, finishes, outdoor gear, or even clothing. Coreq: ARCH 6376. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Cross-listed with ARCH 3804. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6376 - Green Tech Eco-Furniture Fabrication II**

Green Tech II is the second of two courses that is a "real build" course in which students advance their knowledge of environmental design through full-scale construction of architectural elements, furnishings, accessories, finishes, outdoor gear, or even clothing. Students must be enrolled in both Green Tech I and Green Tech II in the same semester. Coreq: ARCH 6375. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Cross-listed with ARCH 3806. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6377 - EcoFAB: Furniture Design and Fabrication for Small-Scale Residential Architecture**

This unique, quick-paced seminar focuses on small-scale residential design, from tiny-homes, to prefab, and movable residences. Students learn Small Home design, methods, and techno-systems, then using green materials, they design and fabricate architectural elements and

furniture for enhancing small-scale living. Restriction: Restricted to ARCH graduate students. Cross-listed with ARCH 3807. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6390 - Special Topics in Technology**

Various topics in technology, according to current faculty and student interests. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Repeatable. Max hours: 18 Credits. **Semester Hours:** 3 to 3

### **ARCH 6412 - Construction Documents**

Introduces the concepts and techniques of construction documents. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6413 - Construction Leadership**

The final course is an integrated architecture, engineering, and construction business course bringing together executives, principals, and managers to current industry topics and provide students opportunities to apply management and leadership principles from the various fields to case study projects. Crosslisted with CVEN 5238. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6420 - Integrated Practice & BIM Technology**

This class will be a general overview of integrated practices and technologies used in today's industry. Understanding the nature of how information is created and managed using BIM technologies will help us define a road map for how information passes downstream and bring value to a project. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6450 - Pre-Design**

Course lectures, readings, and case studies cover pre-design methodologies, research, documentation, facilitation and consensus building. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6463 - BIM: Emerging Prof. Practices**

The 21st century architect's emerging role is designing the design process. BIM (Revit) attempts to optimize the entire process, including all participants, from conceptual design, through post-

building occupancy. These capabilities are explored and developed. Prereq: ARCH 5430. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6464 - BIM: Advanced Design Concepts**

BIM's complexity (Revit) challenges all designers. The emerging tool is very sophisticated, but its benefit are not realized from modeling alone. We address architectural design as a multifaceted optimization process: concept, form, and function. Prereq: ARCH 5430. Cross-listed with ARCH 6390. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6470 - ACE Mentoring**

Graduate students work with professional architects, designers, and engineers mentoring students in selected local high schools to learn problem solving, graphics and model making to produce a design project. Student mentors develop lesson plans, outcomes and keep a weekly journal. Cross-listed with LDAR 6470 and URPL 6850. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ARCH 6471 - Managing Quality & Risks**

A lecture and seminar on approaches to risk management including contracts, insurance, financial analysis, dispute resolution and client relationships. Utilizing case study approach, quality assurance will be defined and studied in the design and building phase of workings. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6472 - Architecture in a Single Source Project Delivery**

Directed to the practice of architecture with design build and other single source delivery systems. This course examines requirements of codes, zoning, building systems and legal questions for the architect. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6473 - Research Tools & Methods**

Introduces the thesis in architecture and establishes the scholarly basis for the research and construction of a Master's Thesis project. This course will provide the student with the research practices and methodologies to develop the scholarship and products required to produce a Thesis Project Proposal. Completion of this course is a prerequisite for the student to submit the Thesis Proposal for departmental approval to continue with the remaining 9 credits of thesis work. Cross-listed with LDAR 6949. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6475 - BIM/Flow of Information**

The course is geared toward CAP students, non-degree seeking working professionals and other students interested in the Integrated Construction, Management and Leadership (ICML) Certificate. This class will be a general overview of Virtual Design and Construction (VDC) in today's AEC industry. Restriction: Graduate students. Junior standing and above undergraduate students are eligible to take course with approval by instructor. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ARCH 6490 - Special Topics in Professional Studies**

Various topics in professional studies according to current faculty and student interests. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Repeatable. Max Hours: 18 Credits. **Semester Hours:** 3 to 3

### **ARCH 6510 - Digital Applications in Design**

This course introduces first year design students to the Graphic Design Concepts and Digital Applications necessary to create digital, printed and physical presentations of their work. Students learn computer skills including: raster and vector based programs and digital modeling. Prereq: ARCH 5110 and ARCH 5510. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6515 - Adv. Digital Representation**

In this course students will learn advanced techniques of architectural representation using digital modeling, rendering engines, and post processing in the Adobe Creative Suite. Prereq: ARCH 5510 and 6510 or equivalent. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6530 - The Art of Proportion**

This course covers the use of proportional systems in the Classical tradition. Students complete a series of graphic exercises culminating in the construction of a Beaux-Art style ink-wash of a classical column. Cross-listed with ARCH 6290 and HIPR 6090. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6550 - Digital Portfolio Design**

This course introduces students to the Graphic Design Concepts and the Digital Applications used to create both Printed and Web-based Portfolios. Students must have completed ARCH 5110 and have a working knowledge of Photoshop. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

## **ARCH 6560 - Architecture Photography**

Emphasizes and understanding of light, composition, color and problem solving, with a particular goal of applying these skills to the photography of architectural exteriors and interiors. For students who have access to adjustable 35 mm digital cameras. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ARCH 6570 - Sketching As Seeing**

Sketching promotes seeing, and seeing promotes thinking. This course is designed to help you think & see by the regular practice of sketching & the discipline of keeping a sketchbook. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ARCH 6575 - 2D-3D & 4D Design Space**

The graphics language of words and art bridge intention and design. Passing ideas and mental imagery through digital technology's 2D, 3D and 4D filters is the challenge. Students develop concepts in AutoCAD, visualize in 3DStudio Max, and narrate the process in Adobe Premiere. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ARCH 6580 - High-Performance Façade Design**

It is the intent of the course to provide graduate students with a comprehensive understanding of the technical concepts and specific skills necessary to undertake in actual practice the design, detailing, specification, and construction administration of high-performance building facades. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max Hours: 3 Credits **Semester Hours:** 3 to 3

## **ARCH 6590 - Special Topics in Representational Studies**

Various topics in representational studies, according to current faculty and student interests. Prereq: ARCH 5510. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 3 to 3

## **ARCH 6710 - Architecture in Other Cultures**

Various studies of architecture and urbanism in foreign countries. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 12 Credits. **Semester Hours:** 1 to 9

## **ARCH 6715 - The Built Environment in Other Cultures I: Research Design**

The intent is to broaden students' perspectives by asking them to examine design within another culture. Each student prepares a proposal of study including a statement of the problem to be addressed, the type of field research to be undertaken and the nature of the report to be produced. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6755 - Rome: Architecture & Urbanism**

The objective of this course is to provide a broad overview of the city's major architectural sites, topography, infrastructure and systems of urban design and organization through the study of the rich palimpsest of buildings, piazzas and landscapes from antiquity to the present day. Coreq: ARCH 6760. Restriction: Restricted to ARCH graduate students. Cross-listed with ARCH 3693. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6760 - Rome: Documentation, Analysis and Design**

With graphic representation as the primary mode of inquiry, this course is an intensive study of a single building, piazza or landscape within the rich urban fabric of Rome. The graphical inquiry will be supported by pre-departure research and onsite observation and presentations. Coreq. ARCH 6755. Restriction: Restricted to ARCH graduate students. Cross-listed with ARCH 3694. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6775 - Bluff General Elective**

Provides students the opportunity to focus their attention on one of three areas: technical studies, professional studies, or cultural studies. Students will complete coursework as it relates to Design Build Bluff. Counts as a general elective. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARCH 6840 - Independent Study**

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to architecture. Prereq: Permission of instructor. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ARCH 6910 - Teaching Assistantship**

Work with a faculty member in a course to help with class preparation and delivery. This is intended for students who may be considering a career in teaching architecture. Prereq: Permission of instructor. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **ARCH 6930 - Architecture Internship**

Designed to provide professional practice experience. The internship is composed of eight hours per week working in a practicing professional's office during the regular semester. Students must complete the second-year level before taking this course. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ARCH 6931 - Architecture Internship**

Designed to provide professional practice experience. The internship is composed of eight hours per week working in a practicing professional's office during the regular semester. Students must complete the second-year level before taking this course. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ARCH 7840 - Independent Study**

Max hours: 3 Credits. **Semester Hours:** 1 to 3

## **Bioengineering**

### **BIOE 3070 - Bioengineering Lab I**

Core bioengineering lab required of all major students. This lab introduces students to experimental techniques in the areas of Biomaterials, Biomedical Instrumentation, and Biomechanics. Prereq: BIOE 1020, 2020; PHYS 2331/2341; CHEM 3411/3418, MATH 2421, 3195, and BIOL 2061/2081 with a C- or higher. Restriction: Restricted to BIOE-BS majors within the College of Engineering, Design and Computing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 3939 - Undergraduate Internship**

Department of Bioengineering Internship. Credit may be applied toward technical electives in the BS in Bioengineering degree. Department consent required. Restriction: Restricted to BIOE-BS majors. Repeatable. Max Hours: 3 Credits. Semester Hours: 1 to 3 **Semester Hours:** 1 to 6

### **BIOE 4035 - Undergraduate BioDesign II**

This represents the second semester of the core undergraduate Biodesign sequence. Students gain experience around Design and Prototyping, Verification and Validation, and evaluation of key components around biomedical technology development. Prereq: BIOE 3090. Restriction: Restricted to full Bioengineering majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 4045 - BioDesign III**

This course represents the capstone culmination of the core undergraduate Biodesign experience. Students finalize all design, prototyping, testing and validation components, and

present the project per professional standards to professionals and peers. Prereq: BIOE 4035 with a C- or higher. Restriction: Restricted to BIOE-BS majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 4053 - Optics and Microscopy in Biomedical Research**

Undergraduate overview of optical imaging, ranging from classical microscopy to advanced, non-linear techniques and includes theory, technology and applications in biomedical sciences. This will prepare students for developing and applying state-of-the-art optical imaging in their research. Cross-listed with BIOE 5053. Prereq: BIOE 3010, 3020, 3030, and 3040 with a C- or higher. Restriction: Restricted to BIOE-BS majors within the College of Engineering, Design and Computing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 4054 - Regulatory Affairs**

This course covers standards of quality assurance and regulatory pathways that guide biomedical engineering industry. Cross-listed with BIOE 5054. Restriction: Restricted to BIOE majors or with instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 4057 - Rehabilitation and Assistive Technology**

This course provides students with an overview of technologies and their use by and for persons with disabilities. Cross-listed with BIOE 5057. Restriction: Restricted to students with BIOE designation, or with instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 4058 - Intro to Design, Disability, and Aging**

This course provides an introduction to the topic of disability and aging and the application of bioengineering principles for persons living with functional impairment(s) across the lifespan. Cross-listed with BIOE 5058. Restriction: Restricted to BIOE majors or with instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 4064 - Advanced MatLab For Bioengineers And Life Scientists**

MatLab programming for undergraduate bioengineers and life scientists. Topics include MatLab syntax and optimization as well as techniques for working with scalars, time-series, images and multi-dimension datasets. Surface/Curve fitting. modeling, automation and classification will be covered. Cross-listed with BIOE 5064. Prereq: BIOE 3010, 3020, 3030, and 3040 with a C- or higher. Restriction: Restricted to BIOE-BS majors within the College of Engineering, Design and Computing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 4065 - Introduction to iOS Apps**



This course will introduce students to best practices in developing Health centered iOS Apps. Topics will focus on Xcode, Object Oriented Design, Objective-C, Cocoa, Core Data and the iOS emulator. Cross-listed with BIOE 5065. Prereq: BIOE 3010, 3020, 3030, and 3040 with a C- or higher. Restriction: Restricted to BIOE-BS majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 4066 - Advanced Topics in iOS Apps**

This course will introduce undergraduates to advanced topics focused on creating health centered iOS Apps. Topics will cover best practices for developing Apps across the iOS product lineup including Apple Watch and developing for Apple Health kit. Deployment and validation will also be covered. Cross-listed with BIOE 5066. Prereq: BIOE 3010, 3020, 3030, and 3040 with a C- or higher. Restriction: Restricted to BIOE-BS majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 4067 - Human Factors and Usability Testing for Bioengineers**

This course provides an introduction to human factors testing and evaluation in the context of medical devices and assistive technology (AT). Particular focus will be given towards designing and applying usability testing to inform product design decisions or improvements. Topics include human factor considerations for aging and disabled populations (and their care providers), usability techniques, user experience data collection and interpretation, etc. Students will engage in hands-on human factors assessments such as contextual inquiry of surgery patients, cognitive walkthroughs with simulating disability, and product usability testing and iteration. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 4068 - Introduction to Medical Imaging**

This course will introduce undergraduates to the basic physics, technologies, and clinical methodologies underlying Ultrasound, MRI, CT, PET and SPECT imaging systems. The course will include lectures, and visits to campus hospital and research imaging systems as well as hands on ultrasound labs. Cross-listed with BIOE 5068. Prereq: BIOE 3010, 3020, 3030, and 3040 with a C- or higher. Restriction: Restricted to BIOE-BS majors within the College of Engineering, Design and Computing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 4069 - Advanced Biomechanics for Undergraduates**

This course covers advanced topics such as blood flow dynamics, introduction to non-linear finite deformation techniques, blood rheology, and computational techniques. Prereq: BIOE 3010, 3020, 3030, and 3040 with a C- or higher. Restriction: Restricted to BIOE-BS majors within the College of Engineering, Design and Computing. Cross-listed with BIOE 5069. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 4073 - Neural Interfaces and Bionic Limbs**

This course will introduce undergraduates to topics in neural interfaces (Brain machine interfaces, peripheral nerve interfaces etc), the issues involved in the design of mechatronic limb systems and the decoding algorithms used to map the neural interface to the mechatronic limb. Cross-listed with BIOE 5073. Prereq: BIOE 3010, 3020, 3030, and 3040 with a C- or higher. Restriction: Restricted to BIOE-BS majors within the College of Engineering, Design and Computing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 4083 - Polymers in Biomedical Applications**

This course will introduce undergraduate students to fundamental synthetic method and basic characteristics of various polymeric biomaterials and their crucial roles in different biomedical applications. It will also cover how the polymers can be modified to enhance biomedical applications. Cross-listed with BIOE 5083. Prereq: BIOE 3010, 3020, 3030, and 3040 with a C- or higher. Restriction: Restricted to BIOE-BS majors within the College of Engineering, Design and Computing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 4085 - Tissue Engineering**

This course covers tools, techniques, characterization and applications in modern tissue engineering. Cross-listed with BIOE 5085. Restriction: Restricted to BIOE-BS majors within the College of Engineering, Design and Computing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 4929 - Undergraduate Research Project**

Department of Bioengineering Research Project. Credit may not be applied toward the BS in Bioengineering degree. Department consent required. Restriction: Restricted to BIOE-BS majors. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **BIOE 5010 - Cell and Molecular Biology for Bioengineers**

Introduction to cellular and molecular biology, with a focus on using engineering methods and literature to analyze structure and function of cells throughout lifecycle and multiple scales. Design experiments to test hypotheses. Prereq: Graduate standing in Bioengineering or instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5011 - Systems Physiology for Bioengineers**

Use engineering principles to study key physiological systems. Topics: cardiovascular, neuroscience, urological, or renal medicine. Related engineering principles: pressure-flow relationships, stress-strain, electromechanical coupling and signal transduction. Prereq: Graduate standing in Bioengineering or instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5020 - Analytic Methods for Engineering Analysis**

This course provides mathematical tools essential for graduate level bioengineering work. Studies selected topics from probability, linear algebra, and vector calculus, with emphasis on bioengineering applications. Prereq: Graduate standing in Bioengineering or instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5021 - Numerical Methods for Engineering Analysis**

Provides computational skills and knowledge of numerical methods for engineering/scientific computation using Matlab. Topics: root finding, interpolation, difference and integration rules, solution of initial and boundary value ODEs, and introduction to the solution of PDEs. Prereq: Graduate standing in Bioengineering or instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5030 - Technology for Bioengineers**

This course will prepare students fundamental bioengineering principles common to areas of active research. This includes fundamental principles behind systems and instrumentation in mechanics, electronics, fluid flow and clinical imaging modalities, as well as an introduction to polymeric biomaterials. Prereq: Graduate standing in Bioengineering. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5031 - Technology for Bioengineers II**

This course continues the introduction to imaging from BIOE 5030 (Technology for Bioengineers I) but with a much stronger emphasis on quantitative methods of medical image analysis and description of medical imaging physics. Prereq: Graduate standing in Bioengineering. Grade of B or better in BIOE 5030, or consent of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5039 - Mechatronics and Embedded Systems**

The course focuses on the design and construction of microprocessor-controlled electro-mechanical systems. Lectures review critical circuit topics (Ohm's law, RLC circuits, DC and AC signals, diode and transistor circuits, operational amplifiers, and digital signals), introduce microprocessor architecture and programming, discuss sensor and actuator component selection, robotic systems, and design strategies for complex, multi-system devices. Lab work reinforces lectures and allows hands-on experience with robotic and embedded systems design. Students must design and build an embedded systems device related to assistive technology. Note: Project expenses may be incurred (\$50 maximum). Restriction: Restricted to graduate students in the Department of Bioengineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5040 - Research Methods for Bioengineers**

This course provides an introduction to research methods for bioengineers in order to prepare for basic research, clinical applications and commercialization of medical technologies. Topics include literature review, regulatory policy. Prerequisite: Graduate standing in Bioengineering (MS/PhD). Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **BIOE 5041 - Clinical Experiences for Bioengineers**

This course provides opportunities for clinical experiences such as observing surgeries and touring intensive care units to prepare students for clinical applications and foster collaborations with clinical practitioners. Experiences take place through the school year. Prerequisites: Graduate standing in Bioengineering (MS/PHD). Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **BIOE 5053 - Optics & Microscopy in Biomedical Research**

Graduate overview of optical imaging, ranging from classical microscopy to advanced non-linear techniques and includes theory, technology and applications in biomedical sciences. This will prepare students for developing and applying state-of-the-art optical imaging in their research. Cross-listed with BIOE 4053. Prereq: Grad standing or permission from the instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5054 - Regulatory Affairs**

This course covers standards of quality assurance and regulatory pathways that guide biomedical engineering industry. Cross-listed with BIOE 4054. Restriction: Restricted to BIOE majors or with instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5057 - Rehabilitation and Assistive Technology**

This course provides students with an overview of technologies and their use by and for persons with disabilities. Cross-listed with BIOE 4057. Restriction: Restricted to students with BIOE designation, or with instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5058 - Intro to Design, Disability, and Aging**

This course provides an introduction to the topic of disability and aging and the application of bioengineering principles for persons living with functional impairment(s) across the lifespan. Cross-listed with BIOE 4058. Restriction: Restricted to BIOE majors or with instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5063 - 3D Modeling for Bioengineers**

Course instills 3D modeling skills specific to biomedical industry. Topics include computer aided design, medical imaging, image processing, patient specific image to three-dimensional model reconstruction, non-uniform rational b-spline surfaces, finite element, computational fluid dynamics analyses, physical modeling using rapid prototyping. Restrictions: Matriculated CEDC students. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5064 - Advanced MatLab For Bioengineers And Life Scientists**

MatLab programming for graduate bioengineers and life scientists. Topics include MatLab syntax and optimization as well as techniques for working with scalars, time-series, images and multi-dimension datasets. Surface/Curve fitting. modeling, automation and classification will be covered. Cross-listed with BIOE 4064. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5065 - Introduction to iOS Apps**

This course will introduce graduate students to best practices in developing Health centered iOS Apps. Topics will focus on Xcode, Object Oriented Design, Objective-C, Cocoa, Core Data and the iOS emulator. Cross-listed with BIOE 4065. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5066 - Advanced Topics in iOS Apps**

This course will cover advanced topics focused on creating health centered iOS Apps. Topics will cover best practices for developing Apps across the iOS product lineup including Apple Watch and developing for Apple Health kit. Deployment and validation will also be covered. Cross-listed with BIOE 4066. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5067 - Human Factors and Usability Testing for Bioengineers**

This course provides an introduction to human factors testing and evaluation in the context of medical devices and assistive technology (AT). Particular focus will be given towards designing and applying usability testing to inform product design decisions or improvements. Topics include human factor considerations for aging and disabled populations (and their care providers), usability techniques, user experience data collection and interpretation, etc. Students will engage in hands-on human factors assessments such as contextual inquiry of surgery patients, cognitive walkthroughs with simulating disability, and product usability testing and iteration. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5068 - Introduction to Medical Imaging**

This course will introduce graduate students to the basic physics, technologies, and clinical methodologies underlying Ultrasound, MRI, CT, PET and SPECT imaging systems. The course will include lectures, and visits to campus hospital and research imaging systems as well as hands

on ultrasound labs. Cross-listed with BIOE 4068. Restriction: Restricted to Bioengineering students with graduate student status. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5069 - Advanced Biomechanics for Graduates**

This course covers advanced topics such as blood flow dynamics, introduction to non-linear finite deformation techniques, blood rheology, and computational techniques. Restriction: Restricted to Bioengineering students with graduate student status, or by Permission of Instructor. Crosslisted with BIOE 4069. Max hours: 3 credits. **Semester Hours:** 3 to 3

### **BIOE 5073 - Neural Interfaces and Bionic Limbs**

This course will introduce graduate students to topics in neural interfaces (Brain machine interfaces, peripheral nerve interfaces etc), the issues involved in the design of mechatronic limb systems and the decoding algorithms used to map the neural interface to the mechatronic limb. Cross-listed with BIOE 4073. Restrictions: Matriculated CEDC students. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5074 - Introduction to Laboratory Animal Research**

This course provides basic theoretical and practical knowledge on the use of the most common laboratory animal species, animal models and welfare, general concepts on animal biology and husbandry, and essential principles of anesthesia, analgesia, surgery and peri operative care. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5083 - Polymers in Biomedical Applications**

This course will introduce graduate students to fundamental synthetic method and basic characteristics of various polymeric biomaterials and their crucial roles in different biomedical applications. It will also cover how the polymers can be modified to enhance biomedical applications. Cross-listed with BIOE 4083. Prereq: Graduate standing at CU Denver or instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5085 - Tissue Engineering**

This course covers tools, techniques, characterization and applications in modern tissue engineering. Cross-listed with BIOE 4085. Restriction: Restricted to Bioengineering students with graduate student status. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOE 5420 - Special Topics in Bioengineering**

Special topics of particular interest to graduate students in Bioengineering. Prereq: Graduate standing within the Department of Bioengineering or permission of instructor. Repeatable. Max hours: 12 Credits. **Semester Hours:** 1 to 6

### **BIOE 5840 - Independent Study in Bioengineering**

Graduate level independent study in Bioengineering with a faculty mentor. Prereq: Graduate standing within the Department of Bioengineering or permission of instructor. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **BIOE 5939 - Graduate Internship**

Department of Bioengineering Internship. Credit may not be applied toward the MS in Bioengineering degree. Enrollment by department permission only. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **BIOE 6655 - Foundations of Doctoring MS Years**

This course is for CU MD-MS students who are on leave of absence from SOM and wish to maintain clinical exposure and training during the leave. Prereq: Phase I & II SOM classes and graduate standing in BIOE. Repeatable. Max Hours: 20 Credits. **Semester Hours:** 1 to 5

### **BIOE 6950 - Masters Thesis**

Research for Master Thesis under supervision of faculty thesis advisor. Prerequisites: Consent of thesis advisor. Restrictions: Satisfactory progress toward MS-Bioengineering degree. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 6

### **BIOE 6960 - Master's Project**

Training for Master's Project under the supervision of faculty project advisor. Prereq: Department Consent. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 6

### **BIOE 8990 - Doctoral Dissertation**

Research for doctoral dissertation under supervision of faculty advisor. Prerequisites: Consent of dissertation advisor. Restrictions: Satisfactory progress toward PhD-Bioengineering Degree. Repeatable. Max hours: 10 Credits. **Semester Hours:** 1 to 10

## **Biology**

### **BIOL 1111 - First Year Seminar**

Restriction: Restricted to Freshman level students. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **BIOL 1550 - Basic Biology: Ecology and the Diversity of Life**

Introduces the process of science, gene expression, biological diversity, evolution, and ecology. Highlights applications to contemporary issues. Lecture and lab course. Note: For students who are not majoring in biology. Biology and health career majors should not take this course. Students may not receive credit for this course if they have already received credit for BIOL 2051 and BIOL 2061. Term offered: fall, spring, summer. Max hours: 4 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC1  
**Semester Hours:** 4 to 4

### **BIOL 1560 - Basic Biology: From Cells to Organisms**

Introduces the process of science, cell structure and function, survey of representative human and plant systems, and genetics. Highlights applications to contemporary issues. Lecture and lab course. Note: For students who are not majoring in biology. Biology and health career majors should not take this course. Students may not receive credit for this course if they have already received credit for BIOL 2051 and BIOL 2061. Term offered: fall, spring, summer. Max hours: 4 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC1. **Semester Hours:** 4 to 4

### **BIOL 2010 - Organisms to Ecosystems (Gen Bio)**

This course is a continuation of BIOL 2051. Introduces four major areas of study: (1) evolution,(2) animal structure and function, (3) plant structure and function and (4) ecology. Note: This class is intended for students planning to take upper division biology courses and for biology majors. Biology majors and pre-health career students must also take the accompanying laboratory - BIOL 2081. No co-credit with BIOL 2097. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC2. **Semester Hours:** 3 to 3

### **BIOL 2011 - Organisms to Ecosystems Lab (Gen Bio)**

Investigations, observations, and experiments in evolution, bioinformatics, ecology, and animal behavior, anatomy, and physiology; requires off-campus field work. Note: This class is intended for students planning to take upper division biology courses and for biology majors. Students are strongly encouraged to take BIOL 2061 concurrently or before they take this course. No co-credit with BIOL 2098. Term offered: fall, spring, summer. Max hours: 1 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC1. **Semester Hours:** 1 to 1

### **BIOL 2020 - Molecules to Cells (Gen Bio)**

Introduces four major areas of study: (1) the chemistry of biological systems; (2) the structure and function of the cell; (3) cellular energy transformations (photosynthesis and respiration); and (4) genetics (mitosis, meiosis, patterns of inheritance, molecular genetics). Note: This class is intended for students planning to take upper division biology courses and for biology majors.



Biology majors and pre-health career students must also take the accompanying laboratory - BIOL 2071. It is recommended that students have completed CHEM 1000 or high school chemistry prior to taking this course. Prerequisite: BIOL 2010 or BIOL 2030 with a C- or higher. No co-credit with BIOL 2095. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC2. **Semester Hours:** 3 to 3

### **BIOL 2021 - Molecules to Cells Lab (Gen Bio)**

Introduces the basic scientific approach through investigations, observations, and experiments in cell biology, basic biochemical techniques, genetics, molecular genetics and applications of biotechnology. Note: This class is intended for students planning to take upper division biology courses and for biology majors. Prerequisite: BIOL 2011 or BIOL 2031 with a C- or higher. No co-credit with BIOL 2096. Term offered: fall, spring, summer. Max hours: 1 Credit. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC1. **Semester Hours:** 1 to 1

### **BIOL 2030 - Honors Organisms to Ecosystems (Gen Bio)**

Honors level course limited to students in the BA/BS/MD, Denver Bound and UNHL programs. This course is a continuation of BIOL 2095. Introduces four major areas of study: evolution, animal structure/function, plant structure/function, and ecology. Restriction: Restricted to Biology honors students within the College of Liberal Arts and Sciences Instructor permission required. No co-credit with BIOL 2061. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 2031 - Honors Organisms to Ecosystems Lab (Gen Bio)**

Honors level course limited to students in the BA/BS/MD, Denver Bound and UHL programs. Advanced study of evolution, plant and animal anatomy, developmental biology and includes two off-campus ecology field trips. Restriction: Restricted to Biology honors students within the College of Liberal Arts and Sciences. No co-credit with BIOL 2081. Term offered: spring. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **BIOL 2040 - Honors Molecules to Cells (Gen Bio)**

Honors level course limited to students in the BA/BS/MD, Denver Bound and UNHL programs. Four major topics covered: the chemistry of biological systems, the structure/function of the cell, cellular energy transformations and genetics. Restriction: Restricted to Biology honors students within the College of Liberal Arts and Sciences(student group BH01). Instructor permission required. No co-credit with BIOL 2051. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 2041 - Honors Molecules to Cells Lab (Gen Bio)**

Honors level course limited to students in the BA/BS/MD, Denver Bound and UNHL programs. Introduces the basic scientific approach and report preparation through exercises and experiments in cell biology, basic biomedical techniques, genetics, molecular genetics and applications of biotechnology. Instructor permission required. Prerequisite: BIOL 2011 or BIOL 2031 with a grade of C- or higher. Restriction: restricted to Biology honors students within the College of Liberal Arts and Sciences(student group BH01). No co-credit with BIOL 2071. Term offered: fall. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **BIOL 2840 - Independent Study**

Student will contribute to ongoing faculty or graduate student's lab or field-based investigation that makes an original intellectual or creative contribution to the discipline. Associated coursework includes scientific reading/writing/presentation(s). Note: registration by special processing form only. Prereq: Students must have completed one year of general biology with a grade of "C-" or higher and must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **BIOL 2939 - Internship**

Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: Students must have completed 15 hours of BIOL courses with a 2.75 GPA and must work with Experiential Learning Center advising to complete a course contract and gain approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **BIOL 3020 - Practical Laboratory Skills**

Designed for Students who are interested in working in a professional biology laboratory. Covers improvement of manual dexterity skills, understanding common laboratory apparatus and handling biological macromolecules and living cells. Prereq: BIOL 2010 (or 2061/2097/2030), BIOL 2011 (or 2081/2098/2031), BIOL 2020 (or 2051/2095/2040), and BIOL 2021 (or 2071/2096/2041) AND CHEM 2031(or 2081), CHEM 2038(or 2088), CHEM 2061(or 2091) and 2068(or 2098) with a C- or higher. Max Hours: 1 Credit. **Semester Hours:** 1 to 1

### **BIOL 3104 - Behavioral Genetics**

Interdisciplinary course on relationships between behavior and heredity, with emphasis on human behavioral genetics. Prereq: BIOL 2051/2095, 2061/2097, 2071/2096, and 2081/2098 with a C- or higher. Cross-listed with PSYC 3104. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 3124 - Introduction to Molecular Biology**

Provides an understanding of the structure and function of genetic material, with respect to the regulation of gene expression and protein synthesis. Emphasizes eukaryotic systems and understanding the significance of contemporary laboratory-based research. Prereq: BIOL 3832 with a grade of C- or higher. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 3134 - Advanced Topics**

Periodic examination of current topics in the field of biology. (See Schedule Planner for current topics). Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 8

### **BIOL 3225 - Human Physiology**

The basic orientation of the course is toward understanding the functioning of the body as a set of homeostatic mechanisms. Particular emphasis is placed on membrane potentials, muscle, circulation, respiration, digestion, the kidney, the control of metabolism and acid-based balance. Note: This is a combined lecture and lab course. Prereq: BIOL 2051/2095, 2061/2097, 2071/2096, 2081/2098 and CHEM 2031/2081, 2038/2088, 2061/2091 and 2068/2098 with a C- or higher. Term offered: fall, spring. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **BIOL 3244 - Human Anatomy**

This course introduces structural aspects of the human body from a systems-based approach, in both lecture and laboratory. The systems addressed include the integument, skeletal, muscular, nervous, digestive, respiratory, circulatory, immune, renal, reproductive and endocrine systems. Anatomical models, microscope slides and human cadavers are used in lab. Prereq: BIOL 2051/2095, 2061/2097, 2071/2096 and 2081/2098 with a C- or higher. Term offered: fall, spring. Max hours: 5 Credits. **Semester Hours:** 5 to 5

### **BIOL 3330 - Plant Diversity**

Surveys all major plant groups using evolutionary and ecological principles to interpret patterns of diversity in form and function. Topics include reproduction and life cycles, adaptations and ecological interactions, paleobotany and biogeography, classification and taxonomy and evolution. Prereq: BIOL 2051/2095, 2061/2097, 2071/2096 and 2081/2098 with a C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 3411 - Principles of Ecology**

A lecture course that examines the interrelationships between organisms and their environments. Subject matter includes organism, population and ecosystem levels of study and application to current environmental issues. The emphasis is on the underlying principles of ecology that involve all types of organisms. Note: Satisfies core ecology requirement for biology major. May not be used as upper division biology elective. No co-credit with BIOL 3412. Prereq:

BIOL 2051/2095, 2061/2097, 2071/2096, and 2081/2098 with a C- or higher. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 3445 - Introduction to Evolution**

Introduction to the processes and patterns of evolution. Topics include: history of evolutionary thought, origin of life, evidence for evolution, phylogenetics, evolutionary genetics, natural selection and other evolutionary forces, speciation and biodiversity, evolution of sexual reproduction and social organization. Prereq: BIOL 2051/2095, 2061/2097, 2071/2096 and 2081/2098. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 3521 - Vertebrate Biology**

The Subphylum Vertebrata consists of fish, amphibians, reptiles, birds and mammals--some of the most fascinating and most threatened species on earth. This course covers the evolution, taxonomy, anatomy, physiology, ecology and conservation of these organisms. Prereq: BIOL 2051/2095, 2061/2097, 2071/2096, and 2081/2098 with a C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 3525 - Parasitology**

This course is designed to provide a foundation in parasitology and to improve skills in scientific writing to students interested in biodiversity, veterinarian medicine, public health, & health care. Prokaryotes are addressed briefly; the focus of this course is the natural history of 'traditional' eukaryotic parasites. Topics include evolutionary associations of parasites with plants and animals (including humans), modes of transmission, and general life cycles. Subject matter includes basic anatomy, epidemiology, and physiology, with a brief introduction to immunology. Note: may be used as an upper-division biology elective. Prereq: BIOL 2051/2095, 2061/2097, 2071/2096, and 2081/2098 with a C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 3611 - General Cell Biology**

Covers the structure and function of the cell including bioenergetics, membranes, secretion, respiration and the cell cycle. Prereq: BIOL 2051/2095, 2061/2097, 2071/2096, 2081/2098 and CHEM 2031/2081, 2038/2088, 2061/2091 and 2068/2098 with a C- or higher. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 3621 - Introduction to Immunology**

Provides an introduction to the basic concepts of immunology, including development of the immune system, innate immunity, aspects of the adaptive immune system, and the role of the immune system in disease, as well as allergies and autoimmunity. Prereq: BIOL 3611 and 3832 with a C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 3654 - General Microbiology**

Covers all aspects of the biology of microorganisms: their cellular structures and function, growth and metabolism, general and molecular genetics, diversity and interactions with other organisms and the environment (ecology). The objective is to provide students with a thorough introduction to microbiology including basic micro-biological laboratory techniques. Note: This is a combined lecture and lab course. Prereq: Grade of C- (1.7) or higher in BIOL 2051/2095, 2061/2097, 2071/2096, 2081/2098 & CHEM 2031/2081, 2038/2088, 2061/2091 and 2068/2098. Term offered: fall, spring. Max hours: 5 Credits. **Semester Hours:** 5 to 5

### **BIOL 3674 - Endocrinology**

This systematic survey of the endocrine system looks at the cellular basis and biochemical characteristics of individual endocrine tissues. Their function in the regulation of other endocrinological, physiological, and behavioral events is analyzed. The course emphasizes the human system and complements studies in physiology, behavior and neurobiology. Prereq: BIOL 3611 with a grade of C- or higher. Students will not earn credit for this course if they have already earned credit for BIOL 4674. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 3763 - Biostatistics**

Introduces statistical thinking in biology. Emphasizes data exploration and probability-based inference methods including estimation, testing, and confronting models with data. Concepts and examples for general and applied biology, including ecology and the health sciences. Includes exposure to statistical software. Prereq: BIOL 2051/2095, BIOL 2061/2097, BIOL 2071/2096, BIOL 2081/2098 with a grade of C- or higher, and MATH 1110, or MATH 1120, or 1130, or 1401, or 2411, or 2421 or 2830 with a C- or higher. Term offered: fall, spring. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **BIOL 3804 - Developmental Biology**

Covers gamete development, fertilization, and embryo development including establishing body axes, tissue differentiation and organ formation. Note: Students will not earn credit for BIOL 3804 if they have earned credit for BIOL 4054 and will not earn credit for BIOL 4054 if they have earned credit for BIOL 3804. Prereq: General cell biology with a grade of "C-" or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 3832 - General Genetics**

Introduces molecular, classical, developmental and population genetics. Prereq: BIOL 2051/2095, 2061/2097, 2071/2096, and 2081/2098 with a C- or higher. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 3840 - Independent Study**

Student will contribute to ongoing faculty or graduate student's lab or field-based investigation that makes an original intellectual or creative contribution to the discipline. Associated coursework includes scientific reading/writing/presentation(s). Prereq: Students must have completed one semester of general biology with a grade of "C-" or higher and must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **BIOL 3939 - Internship**

Approved internships will provide opportunities to apply classroom knowledge in a professional environment and expand the student's knowledge of biology. Associated coursework includes scientific reading/writing and presentation(s). Prereq: BIOL 2051 or 2095 and BIOL 2061 or 2097 with a C or higher AND have junior level standing with a 2.75 GPA. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **BIOL 4024 - Introduction to Biotechnology**

Introduces aspects of biotechnology within a historical context, including medical, forensic, agricultural and microbial biotechnology. Addresses principles behind state-of-the-field techniques in recombinant DNA technology, bioinformatics, proteomics and genomics. Biotechnology regulations and ethics will also be discussed. Prereq: BIOL 3832 with a C- or higher. Cross-listed with BIOL 5024. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4050 - Advanced Biology Topics**

Examines current topics in the field of biology. Topics vary from term to term. See Schedule Planner for current topics. Prereq: BIOL 2051/2095, 2061/2097, 2071/2096, and 2081/2098 with a C- or higher. Cross-listed with BIOL 5050. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 8

### **BIOL 4052 - Advanced Ecology**

This combination seminar and lecture course focuses on state-of-field knowledge, current theories and recent models in selected areas of ecology, such as theoretical ecology, evolutionary ecology, population biology and ecosystems ecology. Prereq: Students must have completed BIOL 3411(Principles of Ecology) with a C- or higher, in order to enroll in this course. Cross-listed with BIOL 5052. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4053 - Disease Ecology**

The study of the underlying principles that influence the spatio-temporal patterns of infectious disease in environments. Students will apply ecological theories about concepts such as

biodiversity, trophic interactions, landscape structure, and nutrient cycling to the study of disease. Prereq: Students must have completed BIOL 3411(Principles of Ecology) with a C- or higher, in order to enroll in this course. Cross-listed with BIOL 5053. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **BIOL 4055 - Virology**

This is an upper level undergraduate/graduate class providing an in-depth study of the history of virology, different types of viruses, viral disease, research to combat viral infections, and different uses of viruses in biotechnology. Note: Students will not earn credit for this course if they have already earned credit for BIOL 4051 or BIOL 5051. Prereq: BIOL 3611 with a grade of C- or higher. Cross-listed with BIOL 5055. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4064 - Cell Biology of Disease**

Builds on the foundations laid in the prerequisite courses. How alterations in membrane transport, autophagy, mitochondria, lysosomes, cilia, unfolded protein response and autophagy lead to major human diseases. A major emphasis is the control and integration of cellular activities. Prereq: General cell biology with a C- or higher. One semester of Biochemistry is strongly recommended for optimal student success. Cross listed with BIOL 5064. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4074 - Human Reproductive Biology**

Comprehensive study of anatomy and physiology of human reproduction. Embryogenesis of male and female reproductive systems and detailed analysis of contraception, world population growth, population control and implications of population growth are also covered. Prereq: BIOL 3611 with a C- or higher. Cross-listed with BIOL 5074. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4125 - Molecular Biology Laboratory**

Provides hands-on experiences in molecular biology and an appreciation for using the tools of molecular biology to study biological systems. Emphasis is placed on DNA cloning, PCR, mRNA and protein detection in the context of gene editing. Experimental design and the theories underlying the techniques are also discussed. Prereq: BIOL 3124 with a C- or higher or Coreq: BIOL 3124. Cross-listed with BIOL 5125. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4126 - Molecular Genetics**

Examines molecular techniques and their application to experimental genetics, specifically organization and mapping of genomes, application and model systems in defining hereditary components of disease, and mechanisms of identifying mutations and their implications for

disease. Also addresses application of recombinant DNA technology. Prereq: Completion of Introduction to Molecular Biology with a C- or higher is required in order for students to enroll in this course. Cross-listed with BIOL 5126. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4134 - Human Genetics**

Advanced survey of the current status of the field. Emphasis on understanding, diagnosis and treatment of genetic disease and on the impact of molecular biology on human genetics.

Prereq: General genetics with a grade of "C-" or higher. Cross-listed with 5134. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4144 - Medical Microbiology**

Provides an understanding of the relationship between pathogenic organisms and their host. Emphasis is placed on the area of medical bacteriology, with attention given to mechanisms of pathogenesis, genetics of disease, serology and treatment. Prereq: general microbiology with a grade of "C-" or higher. Cross-listed with BIOL 5144. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4154 - Conservation Biology**

Basic concepts and theories in ecology, population biology and genetics as they apply to issues relating to the preservation of biodiversity, such as the genetics of small populations, captive propagation, restoration ecology and the design of nature reserves. Prereq: Students must have completed BIOL 3411(Principles of Ecology) with a C- or higher, in order to enroll in this course. Cross-listed with BIOL 5154. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4165 - Neurobiology**

Overview of neuroscience, covering the cellular basis of neuronal activity, muscle, sensory structures and the structure and function of the human brain. Prereq: BIOL 3611 and PSYC 2220 with a C- or higher OR BIOL 3225 with a C- or higher. Cross-listed with BIOL 5165. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4225 - Genomics and Bioinformatics**

Explores how genome-wide data are collected and analyzed. Example applications include human disease, microbial evolution, ecological genomics, and parasite drug resistance. Students implement projects based on real DNA sequencing data. Prereq: BIOL 3832 with a C- or higher. Cross-listed with BIOL 5225. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4250 - Mechanisms of Animal Behavior**



The proximate and ultimate mechanisms of animal behavior are analyzed using comparative animal examples from the scientific literature. Proximate mechanisms include genetic and physiological processes. Ultimate mechanisms include the role of natural and sexual selection in the evolution of behavior. Prereq: BIOL 2051/2095, 2061/2097, 2071/2096, and 2081/2098 with a C- or higher. Genetics and human physiology are recommended. Cross-listed with BIOL 5250. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4335 - Plant Science**

Lecture, lab and field trips. An in-depth study of flowering plants, including embryology, structure, function, reproduction, ecology and evolution of the group. Emphasis is placed upon morphology and anatomy at all stages of plant development. Prereq: One year of General Cell Biology (BIOL 3611) with a grade of "C-" or higher. Cross-listed with BIOL 5335. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **BIOL 4345 - Flora of Colorado**

Lecture, lab and field trips. Introduces the vascular plant flora of Colorado, including ferns, gymnosperms and flowering plants. Emphasis on field identification of species representing a range of natural communities from grassland to alpine tundra, as well as non-natives. Field and herbarium techniques covered. Prereq: Students must have completed BIOL 3411(Principles of Ecology) with a C- or higher, in order to enroll in this course. Cross-listed with BIOL 5345. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **BIOL 4415 - Microbial Ecology**

An in-depth study of ecology as it relates to microorganisms; abiotic and biotic interactions within microbial populations in macro- and microhabitats; and the role of microorganisms in maintaining steady state conditions in natural ecosystems. Emphasis is placed on how the ecology of microorganisms affects the human condition. Prereq: General microbiology with a grade of "C-" or higher. Cross-listed with BIOL 5415. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4416 - Aquatic Ecology**

This advanced ecology course examines the inter-relations of biological (including humans), physical and chemical components of wetlands, streams, rivers, lakes, reservoirs and groundwater. Learning is facilitated through lectures, discussions, student presentations, laboratory and field exercises. Prereq: Students must have completed BIOL 3411(Principles of

Ecology) with a C- or higher, in order to enroll in this course. Cross-listed with BIOL 5416. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4425 - Biogeography**

An in-depth study of biological populations through analysis of geographic distribution patterns in space and time. Emphasis on how biogeography informs studies of evolution and ecology and on applied studies in conservation, sustainability, epidemiology, and disease dynamics. Prereq: Students must have completed BIOL 3411(Principles of Ecology) with a C- or higher, in order to enroll in this course. Cross-listed with BIOL 5425. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4430 - Introduction to Spatial Ecology**

Focuses on patterns of life and ecological interactions in space. Emphasis on drivers of patterns, practical application of spatial ecology software, programming, and introductory spatial statistics on the quantification of patterns. Main topics: Scale and scaling, pattern development, detecting and characterizing patterns, temporal dynamics, and implications of spatial structure to conservation biology, resilience, and ecosystem functioning. Cross-listed with BIOL 5430. Prereq: BIOL 3411 with C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4450 - Marine Biology**

Looks at the fascinating organisms that inhabit the oceans, which represent 99% of the living space of earth. While the focus is on the ecology of marine organisms, taxonomy, physiology and anatomy are also covered. Prereq: BIOL 2051/2095, 2061/2097, 2071/2096, and 2081/2098 with a C- or higher. Cross-listed with BIOL 5450. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4460 - Environmental Toxicology**

Text and literature-based course provides students with background knowledge concerning environmental toxins, the nature and extent of environmental contamination, and toxicant effects on individual organisms and populations. Prereq: BIOL 3611 with a grade of C- or higher. Cross-listed with BIOL 5460. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4464 - Exercise Physiology**

This course addresses the dynamic physiological changes associated with exercise. Where human physiology addresses physiological processes at rest, this course explores how the cardiovascular, respiratory, nervous and endocrine systems support increased energy transfer as skeletal muscle becomes more active. Prereq: Human Physiology (BIOL 3225 or equivalent) with a grade of C- or higher. Cross-listed with BIOL 5464. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4474 - Ecological Methods**

Deals with the empirical aspects of an ecological study. Students learn sampling techniques that are used in plant and animal ecology. Emphasis is placed on hypothesis testing, data analysis and experimental field designs. Prereq: Students must have completed BIOL 3411(Principles of Ecology) with a C- or higher, in order to enroll in this course. Cross-listed with BIOL 5474. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **BIOL 4494 - Population and Evolutionary Genetics**

Introduces the genetic processes underlying evolutionary change in microbial, plant and animal populations. Topics include: sources of variation, Hardy-Weinberg equilibrium, population genetic structure, natural selection and other evolutionary forces, quantitative genetics and molecular phylogenetics. Emphasis on experimental data. Prereq: Completion of General Genetics and Introduction to Evolution with a C- or higher is required in order for students to enroll in this course. Cross-listed with BIOL 5494. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4550 - Cell Signaling**

Lecture by faculty and student presentations cover mechanism of hormones and regulation of various cellular processes through second messenger systems. Prereq: General cell biology with a grade of "C-" or higher; one semester of biochemistry recommended. Cross-listed with BIOL 5550. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4634 - Biology of Cancer**

Cancer is the second leading cause of death in the United States. This course offers an overview of recent research into the causes, treatments and possible prevention of cancer. Includes a detailed look at the mechanisms of action of various oncogenes. Prereq: BIOL 3611 and BIOL 3832 with a C- or higher. Cross-listed with BIOL 5634. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4640 - Mammalogy**

Lecture, laboratory, and required field trips. This course provides a general overview of the biology of mammals, including their diversity, distribution, economic importance, and other characteristics that make them of special interest to humans. Coverage will be worldwide, with special emphasis placed on the mammals of Colorado. Prereq: BIOL 3411 with a grade of C- or higher. Cross-listed with BIOL 5640. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **BIOL 4644 - Advanced Human Anatomy Laboratory**

Advanced laboratory course in human anatomy. In-depth look at the structural aspects of the human body, emphasizing function. Models, microscope slides, and visual media will supplement cadaver-based dissections. Prereq: One year of general biology and human anatomy with a grade of "C-" (2.0) or higher. Cross-listed with BIOL 5644. Term offered: fall, spring. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **BIOL 4815 - Structural Biology of Neurodegenerative Diseases**

Advanced course in Biochemistry/Biophysics. Principles of Protein Folding, Structure-Function Relationship, and spectroscopic techniques related to characterization of these processes as applied to neurodegenerative diseases such as Parkinson's and Alzheimer's. Prereq: 1) BIOL 2051 & BIOL 2071 or BIOL 2095 & BIOL 2096, and 2) CHEM 3810 or CHEM 4810 or CHEM 5810. Coreq: PHYS 2020 or PHYS 2331. Cross-listed with CHEM 4815, CHEM 5815, and BIOL 5815. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4825 - Biochemistry of Metabolic Disease**

Advanced course in biochemistry. An expanded study of selected topics in metabolism and how they relate to diseases, including inflammation, diabetes, obesity, and rare genetic disorders. Prereq: 1) CHEM 3810 or CHEM 4810 or CHEM 5810 with a C- or higher, and 2) BIOL 2051 & BIOL 2071 or BIOL 2095 and BIOL 2096 with a C- or higher. Cross-listed with CHEM 4825, CHEM 5825, and BIOL 5825. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4835 - Biochemistry of Gene Regulation and Cancer**

Explores the biochemical and molecular aspects of cancer biology. Topics include DNA mutations and repair, gene regulation, oncogenes and tumor suppressors, stem cells and differentiation, and cancer drug development. Prereq: 1) CHEM 3810 or CHEM 4810 or CHEM 5810 with a C- or higher, and 2) BIOL 2051 & 2071 or BIOL 2095 & BIOL 2096 with a C- or higher. Cross-listed with CHEM 4835, CHEM 5835, and BIOL 5835. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 4840 - Independent Study**

Student will contribute to ongoing faculty or graduate student's lab or field-based investigation that makes an original intellectual or creative contribution to the discipline. Associated coursework includes scientific reading/writing/presentation(s). Note: Registration by special processing form only. Prereq: Students must have completed one year of general biology with a grade of "C-" or higher and must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

### **BIOL 4880 - Directed Research**

A student designed lab or field-based investigation that involves data collection, and that makes an original intellectual or creative contribution to the discipline. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **BIOL 4974 - Advanced Evolution**

A capstone course that draws upon concepts from all fields of biology. Topics include the fossil record, mass extinctions, the historical development of the modern synthesis, principles and mechanisms of evolution, current viewpoints and controversies. Prereq: BIOL 3445 and 3832 with a C- or higher. Cross-listed with BIOL 5974. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5024 - Introduction to Biotechnology**

Introduces aspects of biotechnology within a historical context, including medical, forensic, agricultural and microbial biotechnology. Addresses principles behind state-of-the-field techniques in recombinant DNA technology, bioinformatics, proteomics and genomics. Biotechnology regulations and ethics will also be discussed. Restriction: Restricted to degree granting graduate programs on the downtown campus as well as the School of Medicine on the Anschutz Medical campus. Cross-listed with BIOL 4024. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5050 - Advanced Biology Topics**

Examines current topics in the field of biology. Topics vary from term to term. See Schedule Planner for current topics. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4050. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 8

### **BIOL 5052 - Advanced Ecology**

This combination seminar and lecture course focuses on state-of-field knowledge, current theories and recent models in selected areas of ecology, such as theoretical ecology, evolutionary ecology, population biology and ecosystems ecology. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4052. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5053 - Disease Ecology**

The study of the underlying principles that influence the spatio-temporal patterns of infectious disease in environments. Students will apply ecological theories about concepts such as biodiversity, trophic interactions, landscape structure, and nutrient cycling to the study of

disease. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4053. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5055 - Virology**

This is an upper level undergraduate/graduate class providing an in-depth study of the history of virology, different types of viruses, viral disease, research to combat viral infections, and different uses of viruses in biotechnology. Note: Students will not earn credit for this course if they have already earned credit for BIOL 4051 or BIOL 5051. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4055. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5064 - Cell Biology of Disease**

Builds on the foundations laid in the prerequisite courses. How alterations in membrane transport, autophagy, mitochondria, lysosomes, cilia, unfolded protein response and autophagy lead to major human diseases. A major emphasis is the control and integration of cellular activities. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4064. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5068 - The Cell Cycle**

Provides an in-depth study of the molecular regulation of the eukaryotic cell cycle. Includes mitosis, meiosis, developmental cell cycles, cell cycle checkpoints and cell cycle defects in cancer. Restriction: Restricted to degree-granting graduate programs. Cross-listed w/BIOL 4068. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5074 - Human Reproductive Biology**

Comprehensive study of anatomy and physiology of human reproduction. Embryogenesis of male and female reproductive systems and detailed analysis of contraception, world population growth, population control and implications of population growth are also covered. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4074. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5125 - Molecular Biology Lab**

Provides hands-on experiences in molecular biology and an appreciation for using the tools of molecular biology to study biological systems. Emphasis is placed on DNA cloning, PCR, mRNA and protein detection in the context of gene editing. Experimental design and the theories underlying the techniques are also discussed. Restriction: Restricted to degree granting graduate programs on the downtown campus as well as the School of Medicine on the Anschutz Medical campus. Cross-listed with BIOL 4125. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5126 - Molecular Genetics**

Examines molecular techniques and their application to experimental genetics, specifically organization and mapping of genomes, application and model systems in defining hereditary components of disease, and mechanisms of identifying mutations and their implications for disease. Also addresses application of recombinant DNA technology. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4126. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **BIOL 5128 - Topics in Molecular Biology**

Literature-based course examining the regulation of gene expression in eukaryotic systems, as well as contemporary recombinant DNA technology and applications of molecular cloning techniques. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4128. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5134 - Human Genetics**

Advanced survey of the current status of the field. Emphasis on understanding, diagnosis and treatment of genetic disease and on the impact of molecular biology on human genetics. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4134. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5144 - Medical Microbiology**

Provides an understanding of the relationship between pathogenic organisms and their host. Emphasis is placed on the area of medical bacteriology, with attention given to mechanisms of pathogenesis, genetics of disease, serology and treatment. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4144. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5154 - Conservation Biology**

Basic concepts and theories in population biology and genetics as they apply to issues relating to the preservation of biodiversity, such as the genetics of small populations, captive propagation, restoration ecology and the design of nature reserves. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4154. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **BIOL 5165 - Neurobiology**

Overview of neuroscience, covering the cellular basis of neuronal activity, muscle, sensory structures and the structure and function of the human brain. Restriction: Restricted to degree-

granting graduate programs. Cross-listed with BIOL 4165. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5225 - Genomics and Bioinformatics**

Explores how genome-wide data are collected and analyzed. Example applications include human disease, microbial evolution, ecological genomics, and parasite drug resistance. Students implement projects based on real DNA sequencing data. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4225. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5250 - Mechanisms of Animal Behavior**

The proximate and ultimate mechanisms of animal behavior are analyzed using comparative animal examples from the scientific literature. Proximate mechanisms include genetic and physiological processes. Ultimate mechanisms include the role of natural and sexual selection in the evolution of behavior. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4250. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5315 - Plant Systematics**

Lecture, lab and field trips. Extensive introduction to the basic principles and concepts of vascular plant systematics. Topics include principles of taxonomy, nomenclature, methods, systems of classification and field and herbarium procedures. Emphasis on plant structure and identification using fresh, frozen and pressed plant specimens. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4315. Max Hours: 4 Credits. **Semester Hours:** 4 to 4

### **BIOL 5330 - Evolution and Diversification of Plants**

Surveys the diverse assemblage of green algae and land plants. Ecological and evolutionary principles are used to interpret patterns of form and function within the context of their phylogeny as revealed from molecular systematics. Restriction: Restricted to degree-granting graduate programs. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5335 - Plant Science**

Lecture, lab and field trips. An in-depth study of flowering plants, including embryology, structure, function, reproduction, ecology and evolution of the group. Emphasis is placed upon morphology and anatomy at all stages of plant development. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4335. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **BIOL 5345 - Flora of Colorado**



Lecture, lab and field trips. Introduces the vascular plant flora of Colorado, including ferns, gymnosperms and flowering plants. Emphasis on field identification of species representing a range of natural communities from grassland to alpine tundra, as well as non-natives. Field and herbarium techniques covered. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4345. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **BIOL 5415 - Microbial Ecology**

An in-depth study of ecology as it relates to microorganisms; abiotic and biotic interactions within microbial populations in macro- and microhabitats; and the role of microorganisms in maintaining steady state conditions in natural ecosystems. Emphasis is placed on how the ecology of microorganisms affects the human condition. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4415. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5416 - Aquatic Ecology**

This advanced ecology course examines the inter-relations of biological (including humans), physical and chemical components of wetlands, streams, rivers, lakes, reservoirs and groundwater. Learning is facilitated through lectures, discussions, student presentations, laboratory and field exercises. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4416. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5425 - Biogeography**

An in-depth study of biological populations through analysis of geographic distribution patterns in space and time. Emphasis on how biogeography informs studies of evolution and ecology and on applied studies in conservation, sustainability, epidemiology, and disease dynamics. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4425. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5430 - Introduction to Spatial Ecology**

Focuses on patterns of life and ecological interactions in space. Emphasis on drivers of patterns, practical application of spatial ecology software, programming, and introductory spatial statistics on the quantification of patterns. Main topics: Scale and scaling, pattern development, detecting and characterizing patterns, temporal dynamics, and implications of spatial structure to conservation biology, resilience, and ecosystem functioning. Cross-listed with BIOL 4430. Restriction: Restricted to degree-granting graduate programs. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5445 - Applied Environmental Biology**

Examines the reciprocal relationships of organisms and the environment at scales from microbes to ecosystems. Explores the impact of human-caused perturbations on organisms as well as the impact of living systems on the flow of energy and materials (natural and man-made) through the environment. Restriction: Restricted to degree-granting graduate programs. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5450 - Marine Biology**

Looks at the fascinating organisms that inhabit the oceans, which represent 99% of the living space of earth. While the focus is on the ecology of marine organisms, taxonomy, physiology and anatomy are also covered. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4450. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5455 - Comparative Environmental Physiology**

This advanced physiology course explores the physiological evolutionary adaptations of different animals in the context of their environment. Content includes exploration of maintenance of homeostasis via feedback regulation, structure-function relationships, cellular physiology, and the study of organ systems including the nervous, endocrine, respiratory, reproductive and cardiovascular systems. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4455. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5460 - Environmental Toxicology**

Text and literature-based course provides students with background knowledge concerning environmental toxins, the nature and extent of environmental contamination, and toxicant effects on individual organisms and populations. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4460. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5464 - Exercise Physiology**

This course addresses the dynamic physiological changes associated with exercise. Where human physiology addresses physiological processes at rest, this course explores how the cardiovascular, respiratory, nervous and endocrine systems support increased energy transfer as skeletal muscle becomes more active. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4464. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5474 - Ecological Methods**

Lecture, laboratory. Deals with the empirical aspects of an ecological study. Students learn sampling techniques that are used in plant and animal ecology. Emphasis is placed on hypothesis testing, data analysis and experimental field designs. Restriction: Restricted to

degree-granting graduate programs. Cross-listed with BIOL 4474. Max hours: 4 Credits.

**Semester Hours:** 4 to 4

### **BIOL 5475 - Mechanisms of Human Pathology**

Studies physiological, cellular and biochemical processes in human diseases. Mechanisms of inflammatory diseases, infectious diseases, neoplastic diseases, and others will be examined.

Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4475. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5494 - Population and Evolutionary Genetics**

Introduces the genetic processes underlying evolutionary change in microbial, plant and animal populations. Topics include: sources of variation, Hardy-Weinberg equilibrium, population genetic structure, natural selection and other evolutionary forces, quantitative genetics and molecular phylogenetics. Emphasis on experimental data. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4494. Max hours: 3 Credits. **Semester**

**Hours:** 3 to 3

### **BIOL 5550 - Cell Signaling**

Lecture by faculty and student presentations cover mechanism of hormones and regulation of various cellular processes through second messenger systems. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4550. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **BIOL 5621 - Immunology**

Studies antibody-antigen interactions, the immune system, inflammation, hypersensitivity, autoimmunity, and recovery from infection. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4621. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5622 - Topics in Immunology**

An in-depth study of immunological concepts. Topics will vary from semester to semester and may range from specifics of immune cell responses to tolerance and autoimmunity. Delivery will include lecture, student presentations, and discussion. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4622. Max hours: 3 Credits. **Semester**

**Hours:** 3 to 3

### **BIOL 5634 - Biology of Cancer**

Cancer is the second leading cause of death in the United States. This course offers an overview of recent research into the causes, treatments and possible prevention of cancer. Includes a

detailed look at the mechanisms of action of various oncogenes. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4634. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **BIOL 5640 - Mammalogy**

Lecture, laboratory, and required field trips. This course provides a general overview of the biology of mammals, including their diversity, distribution, economic importance, and other characteristics that make them of special interest to humans. Coverage will be worldwide, with special emphasis placed on the mammals of Colorado. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4640. Max hours: 4 Credits. **Semester**

**Hours:** 4 to 4

### **BIOL 5644 - Advanced Human Anatomy Laboratory**

Advanced laboratory course in human anatomy. In-depth look at the structural aspects of the human body, emphasizing function. Models, microscope slides, and visual media will supplement cadaver-based dissections. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4644. Term offered: fall, spring. Max hours: 2 Credits.

**Semester Hours:** 2 to 2

### **BIOL 5705 - Biological Research Workshop**

For graduate and advanced undergraduate students who are directly engaged in original research. Provides introduction to the discovery dissemination and peer review process associated with writing research proposals, manuscripts, and grants, as well as poster and oral presentations. Students will workshop each other's original research. Graduate students enroll in 6705; research-active undergraduates enroll in 5705. Cross-listed with BIOL 6705. Prereq: Students involved in original research. Restriction: Restricted to degree-granting graduate programs. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 2 to 2

### **BIOL 5815 - Structural Biology of Neurodegenerative Diseases**

Advanced course in Biochemistry/Biophysics. Principles of Protein Folding, Structure-Function Relationship, and spectroscopic techniques related to characterization of these processes as applied to neurodegenerative diseases such as Parkinson's and Alzheimer's. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4815, BIOL 4815, and BIOL 4815. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5825 - Biochemistry of Metabolic Disease**

Advanced course in biochemistry. An expanded study of selected topics in metabolism and how they relate to diseases, including inflammation, diabetes, obesity, and rare genetic disorders.

Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4825, CHEM 5825, and BIOL 4825. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5835 - Biochemistry of Gene Regulation and Cancer**

Explores the biochemical and molecular aspects of cancer biology. Topics include DNA mutations and repair, gene regulation, oncogenes and tumor suppressors, stem cells and differentiation, and cancer drug development. Restriction: Restricted to degree-granting graduate programs Cross-listed with CHEM 4835, CHEM 5835, and BIOL 4835. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5840 - Independent Study: BIOL**

Note: Registration by special processing form only. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **BIOL 5910 - Field Studies**

Field studies of individuals, populations and communities comprising a specified ecosystem. Emphasis on field identification of vascular plants and vertebrate animals. Topics include the physical environment, biotic and abiotic interactions, life history, ecological adaptations and biogeography. Note: Lectures and a week-long field trip. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4910. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 5939 - Internship**

Designed experience involving application of specific, relevant concepts and skills in supervised employment situations. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **BIOL 5974 - Advanced Evolution**

A capstone course that draws upon concepts from all fields of biology. Topics include the fossil record mass extinctions, the historical development of the modern synthesis, principles and mechanisms of evolution, current viewpoints and controversies. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4974. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BIOL 6002 - Biology Skills Sets - Pedagogy**

The purpose is to introduce sound practice in teaching and innovation in pedagogy. Topics covered will include assessment techniques, creation of learning goals, and research methods in biological education. Restriction: Restricted to degree-granting graduate programs. Term offered: fall. Max hours: 1 Credit. **Semester Hours:** 2 to 2

### **BIOL 6655 - Seminar**

Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4990. Term offered: fall, spring. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **BIOL 6705 - Biological Research Workshop**

For graduate and advanced undergraduate students who are directly engaged in original research. Provides introduction to the discovery dissemination and peer review process associated with writing research proposals, manuscripts, and grants, as well as poster and oral presentations. Students will workshop each other's original research. Graduate students enroll in 6705; research-active undergraduates enroll in 5705. Cross-listed with BIOL 5705. Prereq: Students involved in original research and permission of instructor. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 2 to 2

### **BIOL 6764 - Biological Data Analysis**

Addresses quantitative aspects of research design, data collection and analysis in the biological sciences. Emphasizes relationships among probability theory, estimation, testing, inference, and interpretation. Includes intensive computer lab using the statistical programming software R to demonstrate both traditional analytical and contemporary simulation based (permutation, bootstrap, and Bayesian) approaches for inference in biology. Restriction: Restricted to degree-granting graduate programs. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **BIOL 6880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **BIOL 6950 - Master's Thesis**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes,

to the Graduate School for approval. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max hours: 9 Credits. **Semester Hours: 1 to 8**

### **BIOL 7010 - Integrative and Systems Biology**

Addresses current research problems in integrative biology and system biology by surveying the peer-reviewed literature. Particular attention will be paid to research topics that integrate multiple levels of biological organization and that investigate how properties of systems emerge from interactions of sub-units. Note: New students in the Integrative and Systems Biology PhD program will enroll in this course during their first year. Restriction: Restricted to degree-granting graduate programs. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **BIOL 7050 - Special Topics**

Readings in current biology topics. Specific topics vary and may be proposed by groups of graduate students who identify a suitable faculty instructor or by a faculty member who identifies a need for advanced study in a specialized topic of biology. Restriction: Restricted to degree-granting graduate programs. Repeatable. Max Hours: 9 Credits. **Semester Hours: 1 to 3**

### **BIOL 7650 - Research in Integrative and Systems Biology**

Designed to allow doctoral students to conduct research for course credit prior to advancement to candidacy. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Ph.D. student and permission of instructor. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max Hours: 10 Credits. **Semester Hours: 1 to 10**

### **BIOL 7920 - Directed Reading/Grant Writing**

Allows students to examine current literature related to their specialty area of biological research and to work in collaboration with a research mentor to develop a grant-based dissertation proposal in preparation for the comprehensive review examination. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Students must be in the Integrative and Systems Biology PhD program and have permission from the instructor. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours: 3 to 3**

### **BIOL 8990 - Doctoral Dissertation**

Designed to allow doctoral students to conduct research for course credit prior to advancement to candidacy. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Students must be in the Integrative and Systems Biology PhD program and have permission from the instructor. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max hours: 60 Credits. **Semester Hours:** 1 to 10

### **BIOL 9000 - INTC: Special Topics**

Restriction: Restricted to degree-granting graduate programs. Repeatable. Max Hours: 10 Credits. **Semester Hours:** 1 to 10

### **Bus Minor for non-bus majors**

#### **BMIN 1000 - Introduction to Business**

The business and economic landscape is introduced illustrating the challenges and opportunities in today's business environment. A foundation in traditional business disciplines is introduced including the principles and terminology employed in Marketing, Management, Finance, Accounting, Operations, and Economics. This course is cross-listed with MGMT 1000. Restriction: Students enrolled in the Business School are not eligible for this course. Note: Students seeking a Minor in Business Fundamentals are encouraged to enroll in BMIN 1000 as their first course. However, BMIN 1000 may be taken as a co-requisite with BMIN 3001, 3002 or 3003 or ENTP 3000. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **BMIN 1010 - Introduction to Business -- Career Planning**

Students will explore their best career choices based on assessments and their personality type. They will learn what strengths they bring to a team and to their individual management style utilizing the Myers Briggs Type Indicator and Strong Interest Inventory assessments. Topics covered include: career exploration, career and internship planning, personality styles and strengths, working with executives, corporate culture overview, business trends and news, and analysis of Fortune 100 companies. Supplemental topics include: resume writing, effective interviewing, time management, business writing and hiring trends. Restriction: Students enrolled in the Business School are not eligible for this course. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **BMIN 3001 - Fundamentals of Management and Marketing**

Comprised of two modules focusing on essential concepts of Management and Marketing: 1) Management: Including organizational behavior concepts, leadership, management skills and methods and team dynamics 2) Marketing: Students will develop a new product marketing plan including, industry and market research, market segmentation, marketing mix planning and



implementation strategies. Restriction: Students enrolled in the Business School are not eligible for this course. Co-req: BMIN 1000 or MGMT 1000. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **BMIN 3002 - Fundamentals of Accounting and Finance**

Comprised of two modules focusing on essential concepts of 1) Accounting: including the use of information in financial reports and in making business decisions, and 2) Finance: including financial markets, capital structure, time-value of money, valuation and capital budgeting. Restriction: Students enrolled in the Business School are not eligible for this course. Co-req: BMIN 1000 or MGMT 1000. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **BMIN 3004 - Principles of Strategic Management**

Students will examine the critical issues related to running sustainable businesses. Using the strategic management model as a framework, the course focuses primarily on developing and implementing corporate strategy. Topics covered include mission, vision and values; corporate social responsibility; competitive analysis; leveraging core competencies; developing a business model, and creating value. Supplemental topics include how to create competitive advantage through innovation, choosing an appropriate legal business entity, and managing risk. This is a capstone course and synthesizes key concepts from other Cohort Business Minor courses including entrepreneurship, accounting & finance, management, and marketing. Restriction: Students enrolled in the Business School are not eligible for this course. Prereq: BMIN 3001, BMIN 3002, Junior-Level Standing. Max hours: 3 Credits. **Semester Hours: 3 to 3**

## **Business**

### **BUSN 1110 - Intro to Investment Services Careers**

Open to all majors! Provides a comprehensive overview of careers in the Investment Services industry. Emphasis will be on interactions with industry professionals to provide hands-on knowledge and opportunities for in-depth discussion. Students are required to participate in a site visit to an investment services company during the course. Max hours: 1 Credit. **Semester Hours: 1 to 1**

### **BUSN 1200 - Career and Professional Development**

This first year course develops a student's professional skills, providing knowledge on key factors for early and long-term career success. Through applied learning and career-oriented experiences, the course covers: career and major exploration, student resources, resume writing, interview skills, business communications, professional etiquette, emotional intelligence, time management, ethical behavior, and workplace expectations. Students will have opportunities to develop their own professional network with business leaders as new

members of the Business School. Restriction: Restricted to freshman level Business School majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 5939 - Internship**

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **BUSN 6520 - Leading Individuals and Teams**

Students learn the strengths and weaknesses of their management style and how to work effectively with individual differences. Students also learn how to form teams around purpose/task, diagnose problems and identify and implement solutions by utilizing leadership skills such as setting goals, processes and measures, interpersonal communication, motivation and conflict management. Students develop an understanding of the effect of the organizational and social context on the behavior of individuals and teams. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6521 - Leading Individuals and Teams**

Students learn the strengths and weaknesses of their management style and how to work effectively with individual differences. Students also learn how to form teams around purpose/task, diagnose problems and identify and implement solutions by utilizing leadership skills such as setting goals, processes and measures, interpersonal communication, motivation and conflict management. Students develop an understanding of the effect of the organizational and social context on the behavior of individuals and teams. The emphasis is on health care issues and is intended for health care students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6530 - Data Analytics for Managers**

Provides an overview of techniques for data analysis, including multiple regression, sampling theory and applications of probabilistic inference from sample data. The emphasis is upon the applications of these techniques to management problems. Students are required to analyze data sets, present their analyses in written or oral form and defend their conclusions.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6540 - Legal and Ethical Environment of Business**

Students develop a working knowledge of legal and ethical parameters for business decision making. The course addresses the legal system and mechanisms for resolving disputes. Topics include constitutional law, torts, product liability, contracts, property law, consumer protection,

intellectual property, business entities and employment law. It stresses the influence of legal issues on organizational decision making. Note: Students can substitute ENTP 6822 but credit cannot be received for both. Health Administration students must take BUSN 6541. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6541 - Legal and Ethical Environment of Business (Health Section)**

Students develop a working knowledge of legal and ethical parameters for business decision making. Addresses the legal system and mechanisms for resolving disputes. Topics include business entities, torts, contracts, employment relationships, litigation and alternative dispute resolution. It stresses the influence of legal issues on organization and decision making. The emphasis is on health care issues and is intended for health care students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6550 - Analyzing and Interpreting Accounting Information**

Emphasizes the use of accounting statements and data in making business decisions. External financial accounting information and concepts are used for investment and credit decisions. Internal managerial accounting information and concepts are used for product costing, cost analysis and management control. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6560 - Marketing Dynamics in the 21st Century**

This course focuses on the art, science, and practice of managing dynamic market environments and making decisions about alternative marketing strategies. Students use analytical frameworks to inform decision-making about the many specific aspects of marketing: e.g., value proposition, target markets, positioning, products, channels of distribution, pricing, communication, and service. Participants learn how to integrate these elements into a Marketing Plan. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6561 - Marketing Management (Health Section)**

Focuses on the formulation and implementation of a marketing plan in the context of the firm's strengths, overall strategy and competitive environment. Emphasis is on understanding the marketing environment and on decision making skills regarding market selection, pricing, promotion, product configuration and management of distribution channels. Restrictions: Restricted to HLAD and MBAH majors within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6610 - Information Systems Strategy**

Digital strategy is the application of digital technologies to business models to form new differentiating business capabilities. The course starts with the highlights of genesis and importance of IT in organizations, including the relationship between digital technology and competitiveness. Then, the development and management of an effective digital infrastructure are discussed. Realizing that the effective use of digital technology requires the alignment of competitive strategies, business processes, and applications, the course takes a top management perspective on the development of policies and plans that maximize the contribution of digital technologies to organizational goals. A broad overview of how systems support the operational, administrative, and strategic needs of organizations is covered. Note: Students cannot receive credit if they have taken BUSN 6810 or ISMG 6180. Cross-listed with ISMG 6180. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6620 - Applied Economics for Managers**

After taking this course, students should be able to apply economic principles to make optimal decisions given firm cost, demand and market circumstances. Also, they should be able to analyze the firms interactions with its competitive market environment. Students will learn basic aspects of federal macroeconomic policy designed to achieve stable prices and economic growth. Also, they will learn to understand the measurement of output (GDP), employment and prices; the conduct of monetary and fiscal policy; and the balance of trade. Co-req: BUSN 6550 or ACCT 6030 or ACCT 6031 and BUSN 6530 or FNCE 6290 or BANA 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6621 - Applied Economics for Managers (Health Section)**

After taking this course, students should be able to apply economic principles to make optimal decisions given firm cost, demand and market circumstances. Also, they should be able to analyze the firm's interactions with its competitive market environment. Students should understand basic aspects of federal macroeconomics policy designed to achieve stable prices and economic growth. Also, they should understand basic aspects of government regulation of business. The emphasis is on healthcare issues and is intended for healthcare students. Co-req: BUSN 6550 or ACCT 6030 or ACCT 6031 and BUSN 6530 or FNCE 6290 or BANA 6610. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6630 - Management of Operations**

This course is concerned with the production and delivery of goods and services. It provides an overview of a variety of contemporary Operation Management topics using current techniques and modeling to solve and understand key issues. Basic Excel skills are required. The use of model-assisted decision making is emphasized. Restriction: Restricted to graduate majors and

NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.  
**Semester Hours:** 3 to 3

### **BUSN 6640 - Financial Management**

This course is concerned with the business firm's decisions to make investments and to finance its operations. Students learn to use the tools and theories underlying business valuation, cost of capital, capital budgeting and capital structure. Students will learn to evaluate a firm's financial position through the examination of its financial statements and to prepare pro forma statements for the firm. Prereq: BUSN 6550 with a grade of C or better. Coreq: BUSN 6530 or FNCE 6290 or BANA 6610 and BUSN 6620 or BUSN 6621. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6710 - Strategic Management**

Concerned with the development of a general management perspective in establishing the strategic direction for an enterprise. Students gain an understanding of strategy formulation and implementation within the context of the global environment. Emphasis is on the integration of knowledge acquired in the previous functional area courses. Note: This course is intended as a final semester Capstone course. Coreq: BUSN 6560 or 6561, BUSN 6630 or BUSN 6631; and BUSN 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6711 - Strategic Management (Health Section)**

Concerned with the development of a general management perspective in establishing the strategic direction for a health delivery organization. Students gain an understanding of strategy formulation and implementation within the context of the managed care environment. Emphasis is on the integration of knowledge acquired in the previous functional area courses. Note: This course is intended as a final semester course. Required of Health Administration majors. Coreq: BUSN 6560 or BUSN 6561, and BUSN 6640. Restrictions: Restricted to HLAD and MBAH majors within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6800 - Topics In Business**

Current topics in business are occasionally offered. Prerequisites vary depending on the material covered. Consult the current 'schedule planner' for specific offerings and prerequisites. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 3

### **BUSN 6807 - Analyzing Emerging Opps & Planning During Uncertain Time**

To develop strategic thinking and practical planning skills. Prepare students for the dynamic and uncertain business environ bus prof face today. More specifically, we explore how to think

innovatively and spot trends, develop formal business plans around emerging opportunities, address uncertain and volatile situations using scenarios. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6811 - IT and New Business Paradigms**

Introduces graduate students to the relationship between information technology and the other functional areas of the business. During the course, students have an opportunity to listen and learn from guest speakers who have been involved with either guiding or interpreting the impact of information technology among functional areas of existing or new business. Through the use of current readings, guest lectures and case analysis, students examine various models of IT and new business paradigms to determine the decisions and success criteria for integrating It in ongoing business. a unique feature of the class will be the opportunity for students to present proposals and projects to be critiqued by individuals with It or business experience. Those individuals provide feedback and perspectives regarding potential It or new business paradigm activities. Prereq: Permission of instructor. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6812 - Business Intelligence and Analytics**

This course covers the collection of computer technologies that support decision making. These technologies have had a profound impact on corporate strategy, performance, and competitiveness. These techniques broadly encompass analytics, business intelligence, and decision support systems. The discussion is organized around key enablers of the three types of analytics (1) descriptive analytics including data warehousing, business reporting, decision dashboard/ scorecards, visual analytics, (2) predictive analytics including Web Analytics, Web Mining and Social media Analytics, and (3) prescriptive analytics including decision analytics and big data analytics. The course concludes with emerging trends and topics in business analytics, including geospatial in analytics, location-based and consumer-oriented analytical applications, mobile platforms, and cloud-based analytics. The recommended prerequisite for this course is ISMG 6080. If you are familiar with database management systems and have worked with such systems (e.g., ACCESS) in the past, you satisfy the prerequisite requirements for this course. Cross-listed with ISMG 6220. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BUSN 6840 - Independent Study**

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 3

### **BUSN 6860 - Finance in the Sports Entertainment Industries**

This course explores the problems and solutions of financing in sports and entertainment business. It focuses on stadium/venue financing, sports team valuation, entertainment event guarantee estimation, player/artist salary issues and managing disparate revenue streams. The course utilizes speakers, articles, problem sets and cases. Prereq: BUSN 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Business Analytics**

### **BANA 2010 - Business Statistics**

Basic principles of probability and statistics with applications in business. Includes descriptive statistics, probability and probability distributions, data collection, sampling distributions, statistical inference, simple regression and the use of a computer to perform statistical analysis. Students are required to present their analyses in written and/or oral form and defend their conclusions. This is a business core course. Therefore a grade of a 'C-' or better must be earned to satisfy Business graduation requirements and prerequisites for other business courses. Prereq: MATH 1070, or MATH 1060, or MATH 1080, or MATH 1110, or MATH 1120, or MATH 1130, or MATH 1401 with a grade of C- or higher. Restriction: Restricted to undergraduate students at a sophomore standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BANA 3000 - Operations Management**

Introduces the concepts and methods commonly used in manufacturing and service operations. Topics include aggregate planning, inventory control, scheduling, quality control, and linear programming. This is a business core course. Therefore a grade of a 'C' or better must be earned to satisfy Business graduation requirements. Prereq: BANA 2010 and ACCT 2200 both with a grade of 'C-' or higher. Restriction: Restricted to undergraduate students at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BANA 4840 - Independent Study**

Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **BANA 4950 - Special Topics in Business Analytics**

Course offered on an irregular basis for the purpose of presenting new subject matter in Business Analytics. Prereq: Will vary depending upon the particular topic and instructor. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BANA 5939 - Internship**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **BANA 6610 - Statistics for Business Analytics**

Provides a conceptual overview of statistical thinking and its applications to business problems. Topics include descriptive statistics, data exploration, probability, inferential methods, regression analysis, classification, regression with high dimensional data, etc. Students gain hands-on experience with data analytic problems via projects using real business settings and data. Restriction: Restricted to MS BANA majors within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BANA 6620 - Computing for Business Analytics**

Introduces database and modeling software used by business analytics professionals. Includes querying relational databases, state-of-the-art statistical freeware, and modeling software. Students learn to obtain, organize, and store data needed for analytics projects, undertake data cleansing for big data tasks, and conduct statistical data visualization. Restriction: Restricted to BANA-MS students within the Business School. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BANA 6630 - Time-Series Forecasting**

Time series analysis is critical to industries such as finance, marketing, retail, and accounting. This course introduces time-series models with emphasis on their practical applications in business. The goal is to show how dynamic financial and economic data can be modeled and analyzed using proper statistical techniques. The topics include methods for trend and seasonal analysis and adjustment, modeling and forecasting with autoregressive moving average (ARMA) processes, and model identification and diagnostics for time series. Other subjects include volatility and state space models. This course provides hands-on experience by pairing lectures on methodology with lab sessions using R to perform real-world data analyses. If you do not meet the prerequisites you may contact the instructor for permission to register. Prereq: BANA 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Note: Can only receive credit for either BANA 6630/DSCI 6230. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **BANA 6640 - Decision Analysis**

Introduces a quantitative approach to business decision making under conditions of risk and uncertainty. Emphasis will include introductions to decision analysis theory, risk analysis, utility theory, multi-criteria decision making, Bayesian decision analysis and hierarchical structured models. Psychological issues and qualitative approaches in the decision-making process will be discussed. Student computer-assisted projects are included. Prereq: BANA 6610 or permission from instructor. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3



## **BANA 6650 - Project Management**

Introduces the topic of Project Management (PM) in a business environment. Emphases will include the knowledge, skills, tools, and techniques as presented in the Project Management Body of Knowledge (PMBOK), a variety of managerial aspects commonly encountered in PM, and current extensions of PM. Projects in diverse contexts are examined. Cross-listed with URPL 6249. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **BANA 6660 - Predictive Analytics**

Addresses statistical and machine-learning approaches to prediction using the very large data sets increasingly common in business applications such as internet-based business, fraud detection, credit scoring and market segmentation. Methods covered in the course include data partitioning, logistic regression, clustering, decision trees, dimension reduction, and neural networks, among others. Emphasis is placed on proper choice of method and understanding of the strengths and limitations of competing methods. Students are expected to analyze and report on a variety of data sets drawn from business application areas. If you do not meet the prerequisites listed, you may contact the instructor for permission. Prereq: BANA 6610  
Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **BANA 6670 - Prescriptive Analytics with Optimization**

Optimization is a key part of Business Analytics dealing with decision problems that lend themselves to modelling and analysis designed to determine optimal decisions. In this course, we'll study methodologies for determining the best course of action in situations with a large number of alternatives, each with their own financial or other characteristics, including restrictions on our actions that must be satisfied as we search for best solutions. While the focus of the course is on modeling and solving a wide variety of optimization problems, we'll also cover the basic mathematical underpinnings of linear programming, the most widely used form of optimization in industry and government and the foundation of many extensions into other classes of optimization. State of the art Software for solving optimization problems will be used throughout the course. Students will work in teams on a project involving optimization and some important problem. Restriction: Restricted to BANA-MS students within the Business School. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **BANA 6680 - Optimization for Machine Learning**

This course will give an introduction on numerical optimization algorithms in the context of machine learning applications. We shall discuss how optimization problems arise in machine learning and what makes them challenging. Topics include traditional nonlinear optimization, linear optimization and discrete optimization with an emphasis on effective computational techniques. We shall also talk about next generation large-scale machine learning algorithms

such as stochastic gradient (SG) method. Applications to a variety of areas such as text mining and neural networks are also stressed through class projects. Problems will be solved using appropriate software tools. Prereq: BANA 6620 and BANA 6670. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BANA 6690 - Network Modeling**

This course introduces network modeling. Utilizing data and metadata, programming, algorithms, statistical analysis, and visualization; networks are studied. The focus is on Business Applications to provide managerial insights and recommendations and will include transportation, social, transactional, electrical and communication networks. Prereq: BANA 6620. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BANA 6720 - Simulation Modeling**

Students learn to model and analyze complex dynamic systems using state-of-the art software. Illustrative application areas include production systems, service systems, distribution systems and health care systems. Topics include creating reliable simulation models, analyzing the input and output from the model, and managing simulation projects. A substantial part of the course will be devoted to student projects where students define, model and analyze a significant system of their choosing. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BANA 6730 - Supply Chain Analytics**

Introduces the design, analysis, management, and control of supply chains. Because of continuing advances in globalization, sustainability, and information technology, course emphasis will include integration of processes and systems, relationship management of upstream and downstream players, and strategies that incorporate current and future trends. Cross-listed with INTB 6730. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BANA 6740 - VBA for Business Analytics**

This course teaches the essentials of Visual Basic for Applications (VBA), the programming language for Microsoft Office. Focus in using VBA as a tool to automate common tasks and to create business analytic applications. Goal is to hide the details of the analytical and modeling techniques by creating user interfaces for inputs and then presenting managerially relevant results. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BANA 6750 - Large-Scale Optimization Methods for Big Data**

Optimization methodologies comprise one of the major components of modern business analytics. In the era of big data where problem scale is enormous, the ability to model and solve large-scale problems is increasingly important. In the first part of this course we will learn how to model and solve large scale applications by using the AMPL modeling language and solvers such as CPLEX and Gurobi. The second half of the course will be devoted to working on projects. Prereq: BUSN 6630 with a grade of "C" or better. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **BANA 6760 - Data Visualization**

The course equips the Business Analyst with foundational concepts and techniques required for telling a compelling story with large complex data sets. The importance of visualizing information for many analysts is often overlooked or downgraded as a natural product of the analytics or model but if the visualization is ineffective the decision making processes and knowledge discovery will be compromised. This is a project-based course that begins with reviewing concepts of human perception and cognition and perceptual accuracy and preferences. In the weeks we have together we will explore the basics of graphic design and making a "good" graph, explore why some data visualizations present information effectively and others do not, and we will also consider visualization as a component of systems for the Data Scientist and Business Analyst and presents examples of EDA (exploratory data analysis), visualizing time, networks, and maps. We end by reviewing methods and tools for static and interactive graphics. Tableau or other cutting-edge software will be utilized. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BANA 6800 - Special Topics**

A number of different current topics in business analytics are discussed in this course. Consult the current schedule for semester offerings. Prereq: Permission of instructor. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 12

### **BANA 6840 - Independent Study**

Instructor approval is required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **BANA 6910 - Business Analytics Practicum**

Students apply business analytics methodologies to a real-life business problem in cooperation with a local organization. Under the supervision of faculty, students engage in problem

definition, analysis and solution. Results are presented in oral and written form to the sponsoring organization. Because the practicum is a capstone course, it is not appropriate for students just beginning the program. Prereq: Will vary depending upon the particular topic (consult the schedule of classes). Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Business Law**

### **BLAW 3050 - Business Law and Ethics**

Students are taught to identify & resolve legal and ethical issues. Topics include contracts, torts, criminal law, constitutional law, business organizations, employment law, intellectual property and real property law. This is a business core course therefore a grade of "C" or better must be earned to satisfy Business graduation requirements. Restriction: Restricted to undergraduate students at a junior standing or higher. Cross-listed with BLAW 3000, ENTP 3120, and BLAW 4120. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BLAW 3100 - Legal and Ethical Implications of Risk**

Topics include contracts, torts, constitutional law, intellectual property, agency, business organizations, employment law, and real property law. Special focus is placed on the relationship between insurance and risk and the topics covered. May be taken in lieu of BLAW 3050. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BLAW 4121 - Legal and Ethical Implications of Risk**

Skills in legal and factual analysis and the application of ethical theories are advanced and refined through cases. Topics: insurance law, personal property and intellectual property law, agency, business entities, securities, employment law, and consumer law. Focus is placed on the relationship between insurance, risk and the covered topics. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **BLAW 4140 - Negotiation Skills/Property: Effective Strategies**

Course covers real and personal property law, including ownership, title, landlord/tenant, easements, environmental law, and zoning. Emerging issues in intellectual property are also reviewed, including U. S. law and international treaties and agreements. Negotiation techniques through role-playing are emphasized. NOTE: This course is an elective course and may not be used to fulfill the CORE BLAW 3050 course. Meets concurrently with MGMT 4140. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **BLAW 6500 - Legal Issues for CPA's**

Examines advanced legal issues affecting accounting financial reporting. Designed for graduate students who want to understand and improve the links between accounting disclosures and legal requirements. Note: This class is rarely offered. Prereq: BLAW 3000 or BUSN 6540 (or equivalent). Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Chemistry**

### **CHEM 1000 - Foundations for General Chemistry**

This is a lecture- only course intended for students pursuing a degree in science or a health-related field. The course is designed for students who have never had a chemistry course or who have not taken general chemistry in 5+ years. Topics include the classification of matter, the Metric system, dimensional analysis, atomic theory and the structure of atoms, periodic relationships, energy and temperature, gas laws and the kinetic molecular theory, compounds and nomenclature of inorganic compounds, the mole, stoichiometry, types of chemical reactions, balancing equations, electron configurations, and chemical bonding. Enrollment in this course is strongly encouraged prior to enrollment in Chem 2031 if the student does not have a strong and recent background in general chemistry. Note: College Algebra or the equivalent is strongly recommended for optimal student success. Students may not receive credit for this course if they have already received credit for CHEM 2031 and CHEM 2061. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 1474 - Core Chemistry: Chemistry for Everyday**

Focuses on the common household chemicals that affect us on a daily basis. Students explore current topics in chemistry and the underlying chemistry of nuclear power, plastics, sunscreens, food, acid rain, etc. Home-based laboratory experiments with safe, common substances. No co-credit: Students may not receive credit for this course if they have already received credit for CHEM 2031 and CHEM 2061. Term offered: fall, spring, summer. Max hours: 4 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC1. **Semester Hours:** 4 to 4

### **CHEM 1494 - Forensic Chemistry**

This one semester chemistry lecture and laboratory course is designed to engage a non-science major through the high-interest topic: criminal investigations. In this course, using the theme of forensic science students will be introduced to a basic understanding of chemistry, the physical and chemical properties of matter, simple types of chemical reactions and equations, and molecular structure of drugs and biomolecules. Note: Two years of high school science and one year of high school algebra are strongly recommended for optimal success. Students will not

receive credit for this course if they have already received credit for CHEM 2031 and CHEM 2061. Term offered: spring, summer. Max Hours: 4 Credits. **Semester Hours:** 4 to 4

### **CHEM 1575 - Chemistry: History and Policies**

A study of the building blocks of all matter: chemicals. A focus on how the study of chemistry began and how it has changed over the course of history. The course explores how chemistry has impacted man from the earliest times: from the Bronze Age to the present and beyond. Students learn about the first use of manufactured chemical substances in history and the progression of chemical knowledge throughout history. Students also study how certain substances introduced into the environment throughout history have affected the environment and what policies have been put in place to control or remediate the release of these substances. Eight home-based laboratory experiments will be performed during the semester. High school algebra is strongly recommended preparation for this course. Math concepts critical for this course include basic operations—addition, subtraction, multiplication and division, order of operations, exponents, square roots and the ability to rearrange and solve algebraic equations. Term offered: fall. Max Hours: 4 Credits. **Semester Hours:** 4 to 4

### **CHEM 2031 - General Chemistry I**

This is the first of a two semester sequence designed for students pursuing a degree in science or a health related field. Chem 2031 is designed for students who have recently completed high school chemistry or Chem 1000 with a C- or better. Note: Non-science majors should review the course description for Chem 1474 as an alternative, non-majors science CU Denver Undergraduate Core course, with lab credit. Topics covered include the classification of matter, the Metric system, dimensional analysis, atomic theory and the structure of atoms, periodic relationships, empirical formulas, thermochemistry, gas laws and the kinetic molecular theory, compounds and nomenclature of inorganic compounds, the mole, balancing equations, stoichiometry, types of chemical reactions, solution stoichiometry and dilutions, electron configurations, chemical bonding, Lewis Dot Theory, Valence Shell Electron Pair repulsion Theory, and other topics as time allows. This course is a prerequisite or co-requisite for General Chemistry 1 Lab, Chem 2038. No co-credit with CHEM 2081. Note: a beginning course for science majors, medical technologists, pre-medical and pre-dental students. It is strongly recommended that students have taken CHEM 1000 and MATH 1110 or their high school equivalents to be adequately prepared to succeed in this course. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC2. **Semester Hours:** 3 to 3

### **CHEM 2038 - General Chemistry Laboratory I**

Laboratory course designed to accompany Chem 2031. Topics include gravimetric analysis, statistical analysis, stoichiometry, Avogadro's number, thermochemistry, atomic spectroscopy, paper chromatography, and gas laws. No co-credit with CHEM 2088. Coreq: CHEM 2031 or CHEM 2081. Term offered: fall, spring, summer. Max hours: 1 Credit. GT: Course is approved by

the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC1. **Semester Hours:** 1 to 1

### **CHEM 2061 - General Chemistry II**

This is a continuation of Chem 2031 and is the second course of a two semester sequence designed for students pursuing a degree in science or a health related field. CHEM 2061 builds upon the understanding of chemistry rooted in the molecular nature of matter and change from General Chemistry I and expands to include topics such as intermolecular forces, solution chemistry, kinetics, chemical equilibrium, acid-base chemistry, buffer chemistry, solubility, thermodynamics and time permitting, electrochemistry. Specific topics include: the use of bonding theories to explain the relationships between atomic structure, molecular shape, and macroscopic properties of matter including boiling point, vapor pressure, surface tension, viscosity, and capillarity; the understanding of molecular structure to explain the energetics of solution formation as well as vapor pressures of pure liquids and solutions; the application of rates of reactions to define the state of equilibrium; the application of problem solving techniques for systems at equilibrium to acid/base and solubility chemistry; and the thermodynamic underpinnings of chemical reaction rates and the spontaneous conversion of chemical species to attain a state of dynamic equilibrium. This course is a prerequisite or co-requisite for General Chemistry II Lab, Chem 2068. Prereq: CHEM 2031 or 2081 with a C- or higher. No co-credit with CHEM 2091. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC2. **Semester Hours:** 3 to 3

### **CHEM 2068 - General Chemistry Laboratory II**

Laboratory course designed to accompany Chem 2061. Topics include colligative properties, spectroscopic analysis, kinetics, equilibrium, acid-base chemistry, titrations, and qualitative analysis of metal cations. No co-credit with CHEM 2098. Prereq: CHEM 2038 or 2088 with a C- or higher. Coreq: CHEM 2061 or 2091. Term offered: fall, spring, summer. Max hours: 2 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC1. **Semester Hours:** 2 to 2

### **CHEM 2081 - Honors General Chemistry I**

Topics include gas laws, thermochemistry, the quantum mechanical model of the atom, periodic properties, bonding and molecular geometry and intermolecular forces. Prepares students to take upper division chemistry courses. Honors section: Course assumes knowledge of stoichiometry and basic atomic structure. Note: Students may not receive credit for this course if they have already received credit for CHEM 2031. Prereq: Admission into specific CU Denver program or consent of instructor is required to enroll. Working knowledge of high school algebra and advanced high school chemistry are required. Restriction: Restricted to Chemistry Honors students (CH01). Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CHEM 2088 - Honors General Chemistry I Laboratory**

Laboratory experiments on topics covered in CHEM 2031 or CHEM 2081, gaining experience in observing, recording, and interpreting physical and chemical phenomena. Offers smaller sections and greater access to specialized techniques, open ended experiments, and instrumentation, requiring a faster pace and more sophisticated work. Note: Students may not receive credit for this course if they have already received credit for CHEM 2038. Prereq: Admission into specific CU Denver program or consent of instructor is required to enroll. Coreq: CHEM 2031 or CHEM 2081. No co-credit with CHEM 2038. Term offered: fall. Max hours: 2 Credits. **Semester Hours:** 2 to 2

## **CHEM 2091 - Honors General Chemistry II Lecture**

Continuation of CHEM 2081. Additional topics may include kinetics, equilibria and thermodynamics. Note: Students may not receive credit for this course if they have already received credit for CHEM 2061. Note: Admission into specific CU Denver program or consent of the instructor is required. Prereq: CHEM 2081 or 2031 with a C- or higher. Restriction: Restricted to Chemistry Honors students (CH01). No co-credit with CHEM 2061. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CHEM 2098 - Honors General Chemistry II Laboratory**

Students perform laboratory experiments on topics covered in General Chemistry II (CHEM 2061) or the companion Honors General Chemistry II course. Students gain experience in observing, recording, and interpreting physical and chemical phenomena. Honors General Chemistry II Laboratory is distinguished from the regular General Chemistry Laboratory by smaller sections, and greater access to specialized techniques, open ended experiments, and instrumentation. Students use the laboratory skills they developed in Honors General Chemistry I Laboratory to work independently with a special emphasis on recording, interpreting, and expressing data, chemical safety, the scientific literature, innovation in the laboratory, and presentation of scientific information in oral and poster formats. Prereq: Admission into specific CU Denver program or consent of instructor is required to enroll. Prereq: CHEM 2038 or CHEM 2088. Coreq: CHEM 2091 or CHEM 2061. Restriction: Restricted to Chemistry Honors Students. No co-credit with CHEM 2068. Term offered: spring. Max hours: 2 Credits. **Semester Hours:** 2 to 2

## **CHEM 2300 - Nutritional Chemistry**

Introduces nutrition intended primarily for majors in nursing, physical therapy, physical education. Topics include structure and metabolism of carbohydrates, lipids and proteins, functions of vitamins and minerals and food constituents. Prereq: CHEM 1000 or CHEM 1474 or CHEM 2031 with a C- or better. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3



## **CHEM 2600 - Introductory Topics in Chemistry**

This course is designed primarily for non-chemistry majors. Students will explore a special topic related to chemistry or biochemistry. A description of topics to be covered in the current semester is maintained on the Chemistry department website. Max hours: 6 Credits.

**Semester Hours:** 1 to 3

## **CHEM 2840 - Independent Study: CHEM**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer.

Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

## **CHEM 3011 - Inorganic Chemistry**

The fundamentals of inorganic chemistry, including: atomic, molecular and crystal structures; the energetics of reactions, acid-base interactions; and the chemistry of main group and transition metal elements, including coordination and organometallic chemistry. Prereq or Coreq: CHEM 3421 or 3491 with a C- or higher. Term offered: spring. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

## **CHEM 3018 - Inorganic Chemistry Laboratory**

Combines theoretical concepts with hands-on laboratory experience and introduces students to modern inorganic chemistry. Experiments cover both main group and transition metal chemistry with an emphasis on synthesis, characterization, and application of inorganic compounds. Prereq or Coreq: CHEM 3011 with a C- or higher. Term offered: spring. Max hours:

2 Credits. **Semester Hours:** 2 to 2

## **CHEM 3111 - Analytical Chemistry**

Topics include sampling, volumetric analyses, instrumental analyses and statistical treatment of data. Note: Lecture course for chemistry, biology, medical technology and environmental students. Prereq: CHEM 2061 or CHEM 2091 with a C- or higher. Term offered: fall. Max hours:

3 Credits. **Semester Hours:** 3 to 3

## **CHEM 3118 - Analytical Chemistry Laboratory**

CHEM 3118 provides a strong background in those chemical principles that are particularly important to analytical chemistry, such as the ability to obtain high-quality analytical data. Students gain experience with techniques of sampling and analysis, including an introduction to instrumental methods. Additionally, students develop the skills needed to solve analytical problems in a quantitative manner, with the aid of spreadsheet tools. The post laboratory

assignments demonstrate a writing process that follows the guidelines of the American Chemical Society. Note: Laboratory course to be taken concurrently with CHEM 3111. Prereq: CHEM 2068 or CHEM 2098 with a C- or higher. Coreq: CHEM 3111 or CHEM 3481. Term offered: fall. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **CHEM 3411 - Organic Chemistry I**

Lecture course for science majors. Topics covered include Structure and Bonding, Stereochemistry, Alkanes, reactions of alkenes, alkyl halides, alcohols and other functional groups, reaction mechanism and spectroscopy. Prereq: CHEM 2061 or 2091 with a C- or higher. No co-credit with CHEM 3481. Term offered: fall, spring, summer. Max hours: 4 Credits.

**Semester Hours:** 4 to 4

### **CHEM 3418 - Organic Chemistry Lab I**

Laboratory course for science majors. Topics include methods of purification, separation and analysis of organic compounds; organic reactions and workups and spectroscopy. Emphasis on scientific writing. Prereq: CHEM 2068 or 2098 with a C- or higher. Coreq: CHEM 3411 or CHEM 3481. No co-credit with CHEM 3488. Term offered: fall, spring, summer. Max hours: 1 Credit.

**Semester Hours:** 1 to 1

### **CHEM 3421 - Organic Chemistry II**

Lecture course for science majors. A continuation of Chem 3411. Topics covered include spectroscopy, aromaticity, reactions of alkynes, conjugated dienes, benzene, benzene derivatives, aldehydes, ketone, carboxylic acids, carboxylic acid derivatives, enols, enolates and amines, reaction mechanisms and syntheses. Prereq: CHEM 3411 or 3481 with a C- or higher. No co-credit with CHEM 3491. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **CHEM 3428 - Organic Chemistry Lab II**

Laboratory course for science majors. A continuation of CHEM 3418. Topics include analysis of organic unknowns, organic reactions and workups and spectroscopy. Emphasis on scientific writing. Prereq: CHEM 3418 or 3488 with a C- or higher; Coreq: CHEM 3421 or CHEM 3491. Note: Students will not receive credit for CHEM 3428 if they take it after successfully completing CHEM 3498. Term offered: fall, spring, summer. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **CHEM 3481 - Honors Organic Chemistry I**

Lecture course for science majors. An accelerated and in-depth approach to organic chemistry. Intended for chemistry majors and advanced premedical, pre-dental, pre-pharmacy and other health related careers requiring a full year of organic chemistry. Instructor permission required. Topics covered include Structure and Bonding, Stereochemistry, Alkanes, reactions of alkenes,

alkyl halides, alcohols and other functional groups, reaction mechanism and spectroscopy. Prereq: CHEM 2061 or CHEM 2091, and CHEM 2068 or CHEM 2098 with a C- or higher. Coreq: CHEM 3418 or CHEM 3488. Instructor permission required to enroll. No co-credit with CHEM 3411. Term offered: fall. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **CHEM 3488 - Honors Organic Chemistry Laboratory I**

Laboratory course for science majors. Honors laboratory class to accompany CHEM 3411 or CHEM 3481. Topics include methods of purification, separation and analysis of organic compounds through extended experiments; organic reactions and workups and spectroscopy. Emphasis on scientific writing. Prereq: CHEM 2068 or CHEM 2098 with a C- or higher. Coreq: CHEM 3411 or CHEM 3481. Instructor permission required to enroll. Note: No co-credit with CHEM 3418. Term offered: fall. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **CHEM 3491 - Honors Organic Chemistry II**

Lecture course for science majors. A continuation of Chem 3481. An accelerated and in-depth approach to organic chemistry. Intended for chemistry majors and advanced pre-medical, pre-dental, pre-pharmacy and other health related careers requiring a full year of organic chemistry. Instructor permission required. Topics covered include spectroscopy, aromaticity, reactions of alkynes, conjugated dienes, benzene, benzene derivatives, aldehydes, ketone, carboxylic acids, carboxylic acid derivatives, enols, enolates and amines, reaction mechanisms and syntheses. Prereq: CHEM 3411 or CHEM 3481 and CHEM 3418 or CHEM 3488 with a C- or higher and instructor consent are required in order to enroll in this course. No co-credit with CHEM 3421. Term offered: spring. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **CHEM 3498 - Honors Organic Chemistry Laboratory II**

Laboratory course for science majors. A continuation of CHEM 3418 or CHEM 3488. Topics include multi-step organic reactions, workups and spectroscopy and an independent research project. Emphasis on use of the chemical literature, scientific writing and scientific presentation. Prereq: Students must be a Chemistry or Biochemistry major (CHEM-BS, CHEM-ADL, CHEM-BS2, BICM-BS or BICM-ADL). Students must have completed CHEM 3411 or CHEM 3481 and CHEM 3418 or CHEM 3488 with a C- or higher. Students must have completed CHEM 3421 or CHEM 3491 with a C- or higher or be co-enrolled. Others may be permitted by the instructor. Term offered: fall, spring. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **CHEM 3810 - Biochemistry**

Introduces the principles of biochemistry for science and health science-oriented majors. This survey course covers the important aspects of modern biochemistry including macromolecular structure, enzymology, and metabolism in one semester. Prereq: BIOL 2061 or 2097 and CHEM 3411 or 3481 with a C- or higher. Term offered: fall, spring, summer. Max hours: 4 Credits.

**Semester Hours:** 4 to 4

### **CHEM 3840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **CHEM 3939 - Internship**

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: Students must have a junior standing and at least a 2.75 GPA and must work with the Experiential Learning Center advising to complete a course contract and gain approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **CHEM 4110 - Advanced Analytical Chemistry**

Explores the fundamental principles of analytical chemistry. Topics will focus on meteorology (the science of making measurements), measurements based on energy transfer (e.g. spectroscopic analysis), and measurements based on mass transfer (e.g. chemical separations and electrochemistry). Requisite knowledge in Undergraduate Instrumental Analysis is assumed. Cross-listed with CHEM 5110. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 4121 - Instrumental Analysis**

Surveys instrumental methods of analysis, emphasizing atomic and molecular spectroscopy, mass spectrometry, surface characterization, and chromatography techniques. Students are introduced to a wide array of powerful and elegant tools for obtaining qualitative and quantitative information about the composition and structure of matter. Prereq: CHEM 3111 or CHEM 3481, CHEM 3421 or CHEM 3491, PHYS 2331 or PHYS 2020 and CHEM 4521 with a C- or higher. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 4128 - Instrumental Analysis Laboratory**

CHEM 4128 demonstrates a wide array of powerful and elegant tools for obtaining qualitative and quantitative information about the composition and structure of matter. The post laboratory assignments demonstrate a writing process that follows the guidelines of the American Chemical Society. Note: Required of chemistry majors and open to other students in CHEM 4121. Prereq: CHEM 3118 and 4538 with a C- or higher. Coreq: CHEM 4121. Term offered: spring. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **CHEM 4310 - Advanced Organic Chemistry**

An exploration of structure, bonding and reactivity in organic modules that includes extensive analysis of the chemical literature, culminating in written and seminar presentations of individual projects. Requisite knowledge in Undergraduate Organic Chemistry and Physical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 5310. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 4421 - Cannabis Chemistry**

An exploration of the terpene to cannabinoid compounds including biosynthesis pathways; human receptor structures and mechanism; current analytical methods for Quality Assurance and Quality Control and current research in medical applications. Prerequisite: Organic Chemistry I with a C- or higher (Chem 3411 or Chem 3481), and corequisite/prerequisite: Organic Chemistry II (CHEM 3421 or CHEM 3491). Cross-listed with CHEM 5421. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 4500 - Foundations of Physical Chemistry**

This course prepares students for CHEM 4511 and/or 4521. The goal is to bridge the gap between algebra- and calculus-based physics courses and to introduce essential math concepts and skills in Calculus III that are relevant to the Physical Chemistry course sequence 4511/4521. Pre: PHYS 2020 or (prereq or coreq) PHYS 2331, CHEM 3421 or CHEM 3491 and MATH 2411 with a C- or higher. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 4510 - Computational Chemistry**

Classical and ab initio molecular dynamics are covered from theory to application. Students have access to high-performance computational resources and cover current topics in the field. Requisite knowledge in Undergraduate Physical Chemistry is assumed. Cross-listed with CHEM 5510. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 4511 - Physical Chemistry: Thermodynamics and Kinetics**

Includes study of the laws of thermodynamics, thermochemistry, chemical equilibria, solutions and statistical mechanics. Prereq: PHYS 2020 or PHYS 2331 with C- or higher and either (pre-requisite MATH 2421 Calculus III -OR- CHEM 4500 Foundations for Physical Chemistry with a C- or higher ) OR co-requisite/ pre-requisite MATH 3511 Mathematics of Chemistry with a C- or higher if completed before CHEM 4511. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 4518 - Physical Chemistry Laboratory: Reaction Analysis**

Instruction in the experimental techniques of physical chemistry with emphasis on the properties of gases, thermodynamics and chemical equilibrium. Pre- or Co-Requisite CHEM

4511 with a C- or higher if completed before CHEM 4518. Term offered: spring. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **CHEM 4521 - Physical Chemistry: Quantum and Spectroscopy**

Continuation of CHEM 4511, with emphasis on chemical kinetics, quantum mechanics, molecular structure and spectroscopy. Prereq: PHYS 2020 or PHYS 2331 with C- or higher and either (pre-requisite MATH 2421 Calculus III -OR- CHEM 4500 Foundations for Physical Chemistry with a C- or higher ) OR co-requisite/ pre-requisite MATH 3511 Mathematics of Chemistry with a C- or higher if completed before CHEM 4521. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 4538 - Physical Chemistry Laboratory: Molecular Structure**

CHEM 4538 explores the central principles of physical chemistry, with emphasis on quantum chemistry, spectroscopy, and computational methods. The post laboratory assignments demonstrate a writing process that follows the guidelines of the American Chemical Society. Pre or Co-requisite CHEM 4511 or CHEM 4521 with a C- or higher if completed before CHEM 4538 Term offered: fall. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **CHEM 4548 - Physical Biochemistry Laboratory**

Experimental techniques of physical chemistry emphasizing thermodynamics, kinetics, and spectroscopy of biological molecules. Fulfills the Physical Chemistry Lab requirement for Biochemistry Emphasis majors. Pre or Co-requisite CHEM 4511 or CHEM 4521 with a C- or higher if completed before CHEM 4548 Recommended Preparation: CHEM 4810. Term offered: spring. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **CHEM 4600 - Advanced Topics in Chemistry**

Upper-level majors in chemistry or a related discipline explore a special topic in chemistry or biochemistry. A description of topics to be covered in the current semester is maintained on the Chemistry department website. Max hours: 6 Credits. **Semester Hours:** 1 to 3

### **CHEM 4610 - Understanding & Presenting Chemical Research**

This course will improve your ability to systematically search for chemical information, help you interpret the information you find, & improve your ability to summarize and present that information. Prereq: CHEM 2061 or CHEM 2091 with a C- or higher. Cross-listed with CHEM 5610. Term offered: fall, spring. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 2

### **CHEM 4655 - Teaching Assistant Bootcamp**

This course is 4-5 8-hour days of intensive training in suitable pedagogy for general chemistry and organic chemistry laboratory classes, procedures for teaching laboratory sections, and laboratory techniques. Students must have a teaching assistant contract with the Chemistry Department in order to take this course. Cross-listed with CHEM 5655. Term offered: fall. Repeatable. Max Hours: 1 Credit. **Semester Hours:** 1 to 1

### **CHEM 4700 - Environmental Chemistry**

A discussion of the sources, reactions, transport, effects, and fates of chemical species in the water, soil, and air environments. Prereq: CHEM 3111 or CHEM 3411 or CHEM 3481 with a C- or higher. Cross-listed with CHEM 5700. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 4810 - General Biochemistry I**

In-depth introductory course for chemistry, science and health science majors. Topics include structure and energetics of proteins; mechanisms and kinetics of enzymes; structure and function of carbohydrates, lipids and nucleic acids. Prereq or Coreq: CHEM 3421 or CHEM 3491 with a grade of C- or higher. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 4815 - Structural Biology of Neurodegenerative Diseases**

Advanced course in Biochemistry/Biophysics. Principles of Protein Folding, Structure-Function Relationship, and spectroscopic techniques related to characterization of these processes as applied to neurodegenerative diseases such as Parkinson's and Alzheimer's. Prereq: 1) BIOL 2051 & BIOL 2071 or BIOL 2095 & BIOL 2096, and 2) CHEM 3810 or CHEM 4810 or CHEM 5810 with a C- or higher. Prereq or Coreq: PHYS 2020 or PHYS 2331 with a C- or higher. Cross-listed with CHEM 5815, BIOL 4815, and BIOL 5815. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 4820 - General Biochemistry II**

Advanced course for chemistry, science and health science majors. Topics include energetics and pathways for metabolism of carbohydrates, lipids, and amino acids. Prereq: CHEM 3810 or 4810 or 5810 with a C- or higher. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 4825 - Biochemistry of Metabolic Disease**

Advanced course in biochemistry. An expanded study of selected topics in metabolism and how they relate to diseases, including inflammation, diabetes, obesity, and rare genetic disorders. Prereq: 1) CHEM 3810 or CHEM 4810 or CHEM 5810 with a C- or higher and 2) BIOL 2051 & BIOL 2071 or BIOL 2095 and BIOL 2096 with a C- or higher. Cross-listed with CHEM 5825, BIOL 4825 and BIOL 5825. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 4828 - Biochemistry Lab**

Focuses on modern laboratory techniques for biochemical research, with an emphasis on methods for protein isolation, purification and characterization. Students perform experiments including chromatography, electrophoresis, molecular cloning, spectrophotometry, and enzyme activity assays. Prereq: CHEM 3810 or CHEM 4810 or CHEM 5810 with a C- or higher. Term offered: spring. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **CHEM 4840 - Independent Study: Chem**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Prereq: Permission of instructor required. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

### **CHEM 4845 - Molecular Modeling and Drug Design**

Advanced course in biochemistry. An introductory course on modern molecular modeling techniques and their applications to computer-aided rational drug design. Prereq: CHEM 3411 with a C- or higher and either PHYS 2020 or PHYS 2331 with a C- or higher. Cross-listed with CHEM 5845. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **CHEM 5010 - Advanced Inorganic Chemistry**

Covers the fundamental principles of inorganic chemistry. Topics include atomic structure and periodicity, molecular symmetry, bonding, structural chemistry, main-group chemistry, coordination chemistry, and organometallic chemistry. Requisite knowledge in Undergraduate Inorganic and Physical Chemistry assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4010. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3



### **CHEM 5071 - RM-MSMSP: Atoms and Properties of Matter**

Systematic study of the structure of the atom, how atoms interact to form bonds, how matter behaves at the molecular level, the periodic table, and the macroscopic properties of matter. Concepts are linked to other scientific, mathematical, societal, and pedagogical domains. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: Permission of project director. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **CHEM 5072 - RM-MSMSP: Interactions of Elements and Compounds**

Systematic study of solubility (physical and chemical properties of solutions and the chemistry of acids, bases, pH, and buffer solutions), oxidation or reduction reactions, reaction energetics (thermodynamics and kinetics), and applications of chemistry to environmental, biochemical, and nutritional problems. Concepts are linked to other scientific, mathematical, societal, and pedagogical domains. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: CHEM 5071 with a B- or higher. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **CHEM 5073 - RM-MSMSP Research Experience for Teachers - Chemistry Cohort**

The Research Experience for Teachers (RET) program will be a five-week research exploration in which twelve RM-MSMSP teachers will raise their level of relevant scientific understanding by engaging in a "hands on" workshop, transforming what they have learned into new curricular materials that will improve the scientific abilities of their students and hopefully stimulate them to consider a STEM career. Note: Credit may not apply toward any CLAS degree. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **CHEM 5110 - Advanced Analytical Chemistry**

Explores the fundamental principles of analytical chemistry. Topics will focus on meteorology (the science of making measurements), measurements based on energy transfer (e.g. spectroscopic analysis), and measurements based on mass transfer (e.g. chemical separations and electrochemistry). Requisite knowledge in Undergraduate Instrumental Analysis is assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4110. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5130 - Surface Analytical Techniques**

Surveys widely used techniques for surface analysis, including thermal desorption, mass spectrometry, X-ray photoelectron spectroscopy, and surface electrochemistry. Applications to catalyst and organic or biological surfaces are included. Requisite knowledge in Undergraduate Instrumental Analysis is assumed. Restriction: Restricted to degree-granting Graduate programs. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5221 - Practical Applications of Spectroscopy**

This course surveys spectroscopic methods in order to deduce the structure of organic compounds from an examination of spectra, with an emphasis on infrared spectroscopy, mass spectrometry, nuclear magnetic resonance spectroscopy, and ultraviolet spectroscopy. Students will be introduced to a wide array of powerful and elegant tools for obtaining qualitative information about the structure of matter. This course will require a good amount of thought, yet all of the concepts and associated mathematical manipulations are within the reach of a student who has met the prerequisites. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4221. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5250 - Chemometrics: Data Analysis**

Provides chemists and environmental scientists with the basic statistical skills for effective data analysis and experimental design. Minimal theoretical detail is provided; practical applications and graphical techniques are emphasized. Restriction: Restricted to degree-granting Graduate programs. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5310 - Advanced Organic Chemistry**

An exploration of structure, bonding and reactivity in organic modules that includes extensive analysis of the chemical literature, culminating in written and seminar presentations of individual projects. Requisite knowledge in Undergraduate Organic Chemistry and Physical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4310. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5421 - Cannabis Chemistry**

An exploration of the terpene to cannabinoid compounds including biosynthesis pathways; human receptor structures and mechanism; current analytical methods for Quality Assurance and Quality Control and current research in medical applications. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4421. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5510 - Computational Chemistry**

Classical and ab initio molecular dynamics are covered from theory to application. Students have access to high-performance computational resources and cover current topics in the field. Requisite knowledge in Undergraduate Physical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4510. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5520 - Molecular Structure and Spectra**

Applies quantum mechanics to the understanding of molecular structure and spectroscopy. Requisite knowledge in Undergraduate Physical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5530 - Advanced Physical Chemistry**

Explores fundamental properties of molecules (bond length and strength, the potential energy surface, reaction rates, etc.) and examines how these properties are measured, using original literature as the primary source, and culminating in written and seminar presentations of individual projects. Requisite knowledge in Undergraduate Physical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4530. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5550 - Applications of Group Theory in Chemistry**

Introduces the basic principles of the group theoretical method as well as its applications in organic, inorganic, and physical chemistry. Covers Mo's for main-group and transition metal compounds, ligand field theory, molecular vibrations, and electron absorption spectroscopy. Requisite knowledge in Undergraduate Physical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5600 - Graduate Topics in Chemistry**

Graduate students in chemistry or a related discipline explore a special topic in chemistry or biochemistry. A description of topics to be covered in the current semester is maintained on the Chemistry department website. Restriction: Restricted to degree-granting Graduate programs. Term offered: spring. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **CHEM 5610 - Understanding & Presenting Chemical Research**

This course will improve your ability to systematically search for chemical information, help you interpret the information you find, & improve your ability to summarize and present that information. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4610. Term offered: fall, spring. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 2

### **CHEM 5655 - Teaching Assistant Bootcamp**

This course is 4-5 8-hour days of intensive training in suitable pedagogy for general chemistry and organic chemistry laboratory classes, procedures for teaching laboratory sections, and laboratory techniques. Students must have a teaching assistant contract with the Chemistry Department in order to take this course. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4655. Term offered: fall. Repeatable. Repeatable. Max Hours: 1 Credit. **Semester Hours:** 1 to 1

### **CHEM 5700 - Environmental Chemistry**

A discussion of the sources, reactions, transport, effects, and fates of chemical species in the water, soil and air environments. Requisite knowledge in Undergraduate Organic and Analytical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4700. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5710 - Air Pollution Chemistry**

Chemical processes occurring in the atmosphere are discussed. Includes application to air pollution problems, including urban air pollution, air quality standards, non-urban air pollution, acid deposition, and stratospheric pollution. Requisite knowledge in Undergraduate Physical or Environmental Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5720 - Atmospheric Sampling and Analysis**

Fundamentals of environmental sampling specifically applied to the atmosphere are discussed. Includes a variety of techniques for the measurement of monitoring gaseous, semi-volatile and particulate air pollutants, techniques for the measurement of criteria pollutants, chemical and physical measurements of particulate and air toxins. Prereq: CHEM 5710 with a B- or higher. Restriction: Restricted to degree-granting Graduate programs or instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5810 - Graduate Biochemistry I**

Topics include proteins, mechanisms and kinetics of enzymes, carbohydrates, lipids and membranes, nucleic acids, genetic engineering, signaling pathways, and energetics, which are integrated with critical analysis of recent journal papers, culminating in written and seminar presentations of individual projects. Requisite knowledge in Undergraduate Organic Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Term offered: fall. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **CHEM 5815 - Structural Biology of Neurodegenerative Diseases**

Advanced course in Biochemistry/Biophysics. Principles of Protein Folding, Structure-Function Relationship, and spectroscopic techniques related to characterization of these processes as applied to neurodegenerative diseases such as Parkinson's and Alzheimer's. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4815, BIOL 4815, and BIOL 5815. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5825 - Biochemistry of Metabolic Disease**

Advanced course in biochemistry. An expanded study of selected topics in metabolism and how they relate to diseases, including inflammation, diabetes, obesity, and rare genetic disorders. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4825, BIOL 4825, and BIOL 5825. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5830 - Graduate Biochemistry II**

Topics include biosynthesis & metabolism of carbohydrates, lipids & amino acids, & genetic information flow of DNA replication, transcription, translation & regulation of transcription, which are integrated with critical analysis of recent literature, culminating in written & seminar presentations of individual projects. Continuation of 5810. Prereq: CHEM 5810 with a B- or higher. Restriction: Restricted to degree-granting Graduate programs or permission of instructor. Term offered: spring. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **CHEM 5835 - Biochemistry of Gene Regulation and Cancer**

Explores the biochemical and molecular aspects of cancer biology. Topics include DNA mutations and repair, gene regulation, oncogenes and tumor suppressors, stem cells and differentiation, and cancer drug development. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4835, BIOL 4835, and BIOL 5835. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **CHEM 5845 - Molecular Modeling and Drug Design**

Advanced course in biochemistry. An introductory course on modern molecular modeling techniques and their applications to computer-aided rational drug design. Restriction: Graduate standing. Cross-listed with CHEM 4845. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHEM 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **CHEM 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **CHEM 5950 - Master's Thesis**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Max hours: 8 Credits. **Semester Hours:** 1 to 8

### **CHEM 6000 - Chemistry Seminar**

Faculty and student presentations of CU-Denver research projects and other current chemistry topics. Note: All chemistry students are encouraged to attend, but credit is given only to those who present seminars. Requisite knowledge in Undergraduate Physical or Environmental Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **CHEM 6001 - Master's Research Seminar**

Students present a formal seminar to the department describing their master's research work. Note: Required for all students completing a thesis-based master's degree; optional for those completing master's projects. Prereq: CHEM 6000 with a B- or higher. Term offered: fall, spring, summer. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **CHEM 6002 - Chemistry Seminar I**

The art of listening to and giving a chemistry seminar. Introduces the chemical literature, the pedagogical techniques of seminar giving, and the critical thinking skills required to understand a technical presentation. Note: Seminar presentations by faculty, outside speakers, and advanced graduate students are analyzed by the students participating in the course. Restriction: Restricted to degree-granting Graduate programs. Max Hours: 1 Credit. **Semester Hours:** 1 to 1

### **CHEM 6003 - Chemistry Seminar II**

Students prepare and give a chemical seminar based on a literature paper. Note: Seminar presentations by students and outside speakers are analyzed by students in the course. Restriction: Restricted to degree-granting Graduate programs. Max Hours: 1 Credit. **Semester Hours:** 1 to 1

## **CHEM 6840 - Independent Study: CHEM**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

## **CHEM 6950 - Master's Thesis**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Max hours: 6 Credits.

**Semester Hours:** 1 to 6

## **CHEM 6960 - Master's Report**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 6

## **Chinese**

### **CHIN 1000 - China and the Chinese**

A multidisciplinary introduction to Chinese society both past and present. Prehistory, birth of imperial China, literature, philosophy, religion, nationalism, revolution, modernization, contemporary life, social structure, gender, food, family life, population policy, ethnicity, popular culture, economics and politics. Note: This course is taught in English. Term offered: fall, spring. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-AH1. **Semester Hours:** 3 to 3

### **CHIN 1010 - Beginning Chinese I**

A basic introduction to Chinese language and culture. Students study pronunciation, vocabulary, grammar and simple writing techniques. Note: Students may not enroll in any lower division (1000/2000) language skills course in which their level of proficiency exceeds that of the course. Students placing into a course through any means other than following the regular sequence must consult with an appropriate faculty member of the Dept. of Modern Languages prior to enrollment. No previous study of Chinese is required. Term offered: fall. Max hours: 5 Credits. **Semester Hours:** 5 to 5

### **CHIN 1020 - Beginning Chinese II**

(Continuation of CHIN 1010.) Further practice of pronunciation, study of vocabulary, grammar, and simple writing techniques. Note: Students may not enroll in any lower division (1000/2000) language skills course in which their level of proficiency exceeds that of the course. Students

placing into a course through any means other than following the regular sequence must consult with an appropriate faculty member of the Dept. of Modern Languages prior to enrollment. Note: This course assumes that students have passed CHIN 1010 or equivalent, or have taken one year of high school Chinese, or possess equivalent proficiency. A grade of C- or higher in CHIN 1010 is recommended for success in this course. This course is not intended for native speakers. Term offered: spring. Max hours: 5 Credits. **Semester Hours:** 5 to 5

### **CHIN 1071 - Mandarin Chinese for the Professions**

Provides students with language skills and cultural knowledge in the context of conducting business with Chinese. Students develop elementary language skills for communication, cultural awareness and business etiquette via structured thematic units with business scenarios and simulations. Note: Chinese 1071 cannot be taken to fulfill language requirements; nor can it be used to substitute for Chinese 1010. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHIN 2110 - Second Year Chinese I**

Continuing development of listening, speaking, reading, and writing skills in practical Chinese, with grammar review and introduction of the Chinese dictionary. In addition to contemporary Chinese, there is some emphasis on Chinese classical materials, such as proverbs. Note: Students may not enroll in any lower division (1000/2000) language skills course in which their level of proficiency exceeds that of the course. Students placing into a course through any means other than following the regular sequence must consult with an appropriate faculty member of the Dept. of Modern Languages prior to enrollment. Note: This course assumes that students have passed CHIN 1020 or equivalent, or have taken two years of high school Chinese, or possess equivalent proficiency. A grade of C- or higher in CHIN 1020 is recommended for success in this course. This course is not intended for native speakers. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHIN 2120 - Second Year Chinese II**

(Continuation of CHIN 2110.) Satisfies the fourth semester language requirement at most graduate schools. Note: Students may not enroll in any lower division (1000/2000) language skills course in which their level of proficiency exceeds that of the course. Students placing into a course through any means other than following the regular sequence must consult with an appropriate faculty member of the Dept. of Modern Languages prior to enrollment. Note: This course assumes that students have passed CHIN 2110 or equivalent, or have taken three years of high school Chinese, or possess equivalent proficiency. A grade of C- or higher in CHIN 2110 is recommended for success in this course. This course is not intended for native speakers. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3



### **CHIN 2840 - Independent Study**

Term offered: fall, spring. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **CHIN 2970 - Contemporary Chinese Cinema**

Introduces students to Chinese cinema, one of the most powerful and often controversial modes of representing society, culture, history and politics in China. Note: Taught in English. All films have English subtitles. No previous study of Chinese language or culture is required. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHIN 3010 - Advanced Intermediate Chinese**

This course capitalizes on students' already acquired knowledge to further develop language skills in Mandarin Chinese. Students learn to make a transition from reading pedagogically prepared materials to more authentic ones. Note: this course assumes that students have passed CHIN 2120 or equivalent, or possess equivalent proficiency. A grade of C- or higher in CHIN 2120 is recommended for success in this course. This course is not intended for native speakers. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHIN 3130 - Special Topics in Chinese**

Varying topics in Chinese language, literature and culture appropriate to the 3000 level, not otherwise covered by regular courses. Note: This course assumes that students have passed CHIN 2120 or equivalent, or possess equivalent language proficiency. Note: May be taken more than once, provided that the topic is different each time. Term offered: spring, fall. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **CHIN 3840 - Independent Study: CHIN**

Term offered: fall, spring. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **CHIN 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **CHIN 5100 - Methods of Teaching Chinese Immersion**

Provides students with an overview of teaching in an immersion environment in Mandarin Chinese. Topics include: immersion models, language/contents and culture, first and second language acquisition, curriculum design, national and state curriculum standards, program management and program assessment. Note: Taught in English. This course is not applicable

toward any degree in the College of Liberal Arts and Sciences. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHIN 5690 - Methods of Teaching Modern Languages**

Studies the methods and practices of teaching modern languages. Note: requirement for those wishing to be teaching assistants in the Department of Modern Languages, and for language majors in the teacher certification program, School of Education, CU Denver. This course is taught in English and does not fulfill the foreign language proficiency requirement for the College of Liberal Arts and Sciences. Cross-listed with MLNG 4690, MLNG 5690, SPAN 4690, SPAN 5690, FREN 4690, FREN 5690, GRMN 4690, GRMN 5690, CHIN 4690. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHIN 5691 - Methods of Teaching Modern Languages II**

A continuation of the study of modern language teaching methods. This second course has an emphasis on experiential learning through individual teaching demonstrations, class observations, as well as team teaching with experienced instructors. Cross-listed with MLNG 4691, MLNG 5691, SPAN 4691, SPAN 5691, FREN 4691, FREN 5691, GRMN 4691, GRMN 5691, CHIN 4691. Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CHIN 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **Civil Engineering**

### **CVEN 1025 - Civil Engineering Graphics and Computer Aided Design**

Introduces microcomputer-based, menu-driven, 2-D and 3-D computer-aided design systems; standard Civil Engineering industry details and some three-dimensional modeling of solid objects; principles on engineering drawing and descriptive geometry with applications specifically geared for civil engineers. Prereq: High School Geometry and Algebra. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 1067 - Introduction to Civil Engineering**

Introduces civil engineering and the many career choices in this broad field. Covers the history of the profession, current civil engineering projects, societal and global implications, technologies used, professional ethics, sustainability, and licensure. Max hours: 1 Credit.

**Semester Hours:** 1 to 1

### **CVEN 1800 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **CVEN 1840 - Independent Study**

This category is intended for topics which students may wish to pursue on their own initiative, with guidance from a professor who agrees to limited consultation on the work and to award credit when the project is completed. Departmental approval is required. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **CVEN 2121 - Analytical Mechanics I**

A vector treatment of force systems and their resultants; equilibrium of trusses, beams, frames, and machines, including internal forces and three-dimensional configurations, static friction, properties of areas, distributed loads and hydrostatics. Prereq: PHYS 2311 and MATH 2411. Cross-listed with MECH 2023. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 2200 - Computing Methods in Civil Engineering**

Introduces MATLAB computer programming for engineering applications. Students will learn programming concepts such as relational and logical operations, branching statements and loops. They will apply these concepts in the MATLAB platform to write programs to solve several engineering problems. Prereq: CVEN 1025 and MATH 2411. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 2212 - Engineering Surveying**

Survey observations used by engineers and surveyors using levels and total stations; adjustment of measured loops, traverses, areas and volumes; analysis of error sources; and presentation of results. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **CVEN 2214 - Surveying for Engineering**

Survey observations used by engineers and surveyors using levels and total stations to make sure things are put in the right place and leveled; analysis and adjustment of measured loops, traverses; areas and volumes; methods used in construction; analysis of error sources; and presentation of results. This course does not include a lab. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **CVEN 2800 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **CVEN 2840 - Independent Study**

This category is intended for topics which students may wish to pursue on their own initiative, with guidance from a professor who agrees to limited consultation on the work and to award credit when the project is completed. Departmental approval is required. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **CVEN 3111 - Analytical Mechanics II**

A vector treatment of dynamics of particles and rigid bodies, including rectilinear translation, central-force, general motion of particles, kinematics of rigid bodies, the inertia tensor, plane motion of rigid bodies; energy and momentum methods for particles, systems of particles and rigid bodies. Prereq: CVEN 2121. Cross-listed with MECH 2033. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 3121 - Mechanics of Materials**

Mechanical properties of materials, stresses and strains in members subjected to tension, compression and shear, combined stresses, flexural and shearing stresses in beams, deflections of beams, column analysis, principal stresses. Prereq: CVEN 2121. Cross-listed with MECH 3043. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 3141 - Introduction to Structural Materials**

To learn the fundamental characteristics of structural materials, including steel, concrete, masonry, timber, and composites; to learn how to test structural materials in the laboratory; and to learn how to interpret test data for engineering applications. After completing this course, students are expected to understand the behavior of structural materials and establish necessary background for structural design courses. Coreq: CVEN 3121. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **CVEN 3200 - Computational Methods for Civil Engineers**

This course introduces advanced programming and data analysis skills pertinent to the range of Civil Engineering disciplines. Topics will include numerical methods, statistical analysis, and programming techniques for measurements and data collection. Languages and tools will include Excel, Matlab, Python, and Arduino. Prereq: IWKS 2300 and MATH 3800 or CVEN 3611 with a C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 3212 - Plane Surveying For GIS Majors**

This course will present the concepts and practical materials for surveying instruments, survey data collection methods and data processing with applications in GIS. It will cover the shape of the Earth theory, Map projections, Datum, 2D and 3D coordinate transformation methods and

coordinate geometry problems. Prereq: MATH 1401 and 2411. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **CVEN 3313 - Fluid Mechanics**

Fundamentals of fluid mechanics. Topics include fluid properties, hydrostatics, the continuity principle, the energy principle, the momentum principle, similitude and dimensional analysis, drag, and friction for laminar and turbulent flow in closed conduits. Prereq: CVEN 2121. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 3323 - Hydrosystems Engineering**

This course covers hydrologic cycle, rain gage and stream gage, basics of rainfall and runoff data analysis, Rational method for peak flow predictions, culvert hydraulics with consideration of inlet and outlet control, sanitary sewer sizing, basics of open channel hydraulics. This course also includes a session of hydraulic experiment to measure the turbulent flow distribution in a steel pipe. Prereq: CVEN 3313. Coreq: CVEN 2200. Restriction: Restricted to Civil Engineering majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 3401 - Introduction to Environmental Engineering**

An introductory course that provides a unique systems approach to environmental engineering, examining the source-to-receptor feedback loop for pollution control. Physical, chemical and biological processes are integrated across atmospheric, wastewater and subsurface systems. Laboratory exercises provide direct experiential learning of key concepts. Prereq: CHEM 1130 or CHEM 2031 or ENGR 1130. Cross-listed with CVEN 5401. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 3414 - Water Supply and Distribution Systems**

Planning and design for potable water supply and distribution. Topics include the civil engineering design process, pressurized pipe networks, pump selection, water demand estimation, surface- and groundwater resources, and reservoir operation. Design project and field trip required. Prereq: CVEN 3313 with a C- or higher. Coreq: CVEN 2200. Restriction: Restricted to Civil Engineering majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 3505 - Structural Analysis**

Principles of structural analysis applied to statically determinate and indeterminate structures. Prereq: CVEN 3121. Restriction: Restricted to Civil Engineering majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 3602 - Transportation Engineering**

This course will introduce you to the concepts and methods of transportation engineering, planning and management. This course will emphasize traffic engineering. Topics will include vehicle dynamics, traffic flow fundamentals, accident analysis, signal timing, highway capacity analysis, level of service analysis, freeway operations, and evaluation procedures for alternative transportation projects. Prereq: C- or better in MATH 1401 or Junior Standing or instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 3611 - Engineering Statistics**

Covers statistical methods for engineering studies. Topics include common probability distributions, sample design, descriptive statistics, hypothesis testing of one or two populations, tests of discrete versus continuous random variables, analysis of variance, linear and non-linear multiple regression models, non-parametric tests of fit. Prereq: Math 1401 Calculus I and Math 2411 Calculus II. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 3718 - Geotechnical Engineering I**

Soil formation, phase diagram, soil constituents and behavior, description of soils, classification, clay minerals, compaction, soil improvement, capillarity, shrinkage, swell, collapsible soil, frost action, flow through porous media, and consolidation. Lab experiments, including specific gravity, grain size analysis, liquid and plastic limits, and consolidation, are to be conducted in concert with the lectures. Prereq: CVEN 3121. Coreq: CVEN 3313. Restriction: Restricted to Civil Engineering majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 3800 - Special Topics: 3800**

Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **CVEN 3840 - Independent Study**

This category is intended for topics which students may wish to pursue on their own initiative, with guidance from a professor who agrees to limited consultation on the work and to award credit when the project is completed. Departmental approval is required. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 8

### **CVEN 4025 - Autocad Civil 3d & Advanced Civil Engineering Graphics**

Lectures target civil engineering industry specific site information modeling software and geospatial industry specific geographical information systems software to elevate students' knowledge of each software to an in-depth understanding. Laboratory exercises will focus on civil drafting and design, producing documentation, and general project workflows. Additional laboratory exercises will focus on geospatial data creation, data management, and cartographic display. Prereq: CVEN 1025. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 4067 - Senior Design Projects**

Senior civil engineering students, working in teams, are assigned significant open-ended design problems requiring the synthesis of material learned in previous engineering courses for solution. Design teams work independently under the supervision of a civil engineering faculty member. Prereq: Graduation Agreement and one design course. Co-req: A second design course. Restriction: Restricted to Civil Engineering majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 4077 - Engineering Economy**

Applies economic and financial principles to evaluation of engineering alternatives. Calculation of annual costs, present worth and prospective rates of return on investment. Review of systems analysis techniques, including simulation, linear programming, and project scheduling. Prereq: Junior standing. Cross-listed with MECH 4147. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 4087 - Engineering Contracts**

Laws met by the practicing engineer, types of contracts, specification writing, laws on contracts, agency, partnership, sales and property, with primary emphasis on rights and duties of the engineer. Prereq: Senior standing. Cross-listed with CVEN 5087. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 4230 - Construction Engineering Systems**

Course provides an introduction to construction engineering management including building mechanical and electrical systems. Restrictions: Restricted to Junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 4388 - Site Engineering**

Course introduces the fundamentals of site engineering which require understanding and interpreting landforms, slopes, contour lines, grading, drainage, and earthwork to storm water management, hydrology reports, designing roadways, and street networks. Other topics include designing for ADA and concepts of sustainability in site design. Note: CAD experience is recommended. Cross-listed with CVEN 5388. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 4424 - Field Methods for Sustainable Development: Colombia**

Course will introduce students to international sustainable development in both lab and field work in Colombia, partnering with communities on sustainable development projects across cultures and disciplines both within and outside of engineering, and emphasizing community interaction. Travel fees are required. Note: Personal essay, letter of recommendation, and

interview with instructor required. Cross-listed with CVEN 5424. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **CVEN 4427 - Storm Water System Design**

This course covers urban watershed analysis, design rainfall and hydrologic losses, flood frequency and design event, rational method for peak runoff prediction, street hydraulic capacity and safety, culvert hydraulics, street inlet collection system, and storm sewer system design and flow analysis. Prereq: CVEN 3323 and senior standing. Restriction: Restricted to Civil Engineering majors. Cross-listed with CVEN 5427. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 4537 - Numerical Methods for Engineers**

Introduces numerical analysis. Solution of linear and non-linear equation systems. Numerical methods for ordinary and partial differential equations. Engineering applications. Prereq: CSCI 1410, MATH 3191 and 3200. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 4565 - Timber Structure Design**

Design of wood roof, wall, and floor systems including beams, columns, trusses, diaphragms and shear walls for vertical and lateral loads. Connection design, glued-laminated members, plywood, and engineered lumber are incorporated. Prereq: CVEN 3505 and CVEN 3141. Cross-listed with CVEN 5565. Restriction: Restricted to Civil Engineering majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 4575 - Structural Steel Design**

Design of structural steel members and their connections. Prereq: CVEN 3505 and CVEN 3141. Restriction: Restricted to Civil Engineering majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 4585 - Reinforced Concrete Design**

Ultimate strength methods for design of reinforced concrete structures. Prereq: CVEN 3505 and CVEN 3141. Restriction: Restricted to Civil Engineering majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 4590 - Design of Prestressed Concrete**

To learn the basic concepts of analysis and design of prestressed concrete, which is reinforced concrete in which steel is tensioned against the concrete, thereby introducing compression in concrete and hence overcoming the tensile weakness of concrete relative to its compressive



strength. Cross-listed with CVEN 5590. Prereq: CVEN 4585 or graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 4602 - Highway Engineering**

Evaluates alternate highway routes. Discusses highway drainage, finance, maintenance, pavement design, traffic operations and principles of economic analysis. Analyses of the impact of the highway on the environment. Cross-listed with CVEN 5602. Prereq: CVEN 3602 with a C- or better. Restriction: Restricted to Civil Engineering majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 4612 - Traffic Impact Assessment**

Covers (1) procedures to satisfy state and local requirements for transportation impact studies, (2) methods to perform trip generation, distribution, and traffic assignment for impact analyses, and (3) analysis of transportation impacts on residential communities, mode choice, regional business (downtown or suburban), peak and off-peak travel times, noise, safety, parking and pedestrians. A course project requires students to develop an application of analysis software to a case study area. Prereq: CVEN 3602. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 4621 - Highway Capacity Analysis**

Covers the principles and applications of highway capacity analysis for freeways and arterials, ramps and interchanges, weave and merge sections, signalized and unsignalized intersections, roundabouts, pedestrian areas and transit. Emphasis is on level-of-service analysis procedures in the Highway Capacity Manual, although other approaches are also discussed. Additional topics include roadway characteristics, vehicle dynamics, human factors, speed and volume studies, travel time surveys and traffic flow characteristics. Prereq: CVEN 3602. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 4719 - Design & Construction of Geosynthetic Soil Structures**

Theory of reinforced soil; Mechanical and hydraulic properties of geosynthetics; Soil-geosynthetic interaction behavior; Design concepts of GRS structures; Design and construction of GRS retaining walls; Design and construction of GRS embankments and slopes; Design and Construction of GRS foundations. Prereq: CVEN 3718 and 4728. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 4728 - Geotechnical Engineering II**

Shear behavior and strength, and basic applications of shear strength (such as earth pressure and retaining structures, bearing capacity of footings, and slope stability). Lab experiments, including permeability, direct shear, unconfined compression, and triaxial tests, are to be

conducted in concert with the lectures. Prereq: CVEN 3708/3718. Restriction: Restricted to Civil Engineering majors. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **CVEN 4738 - Intermediate Foundation Engineering**

Applies principles of soil mechanics to the analysis and design of foundations and earth structure. Theories of consolidation, earth pressure, slope stability, and bearing capacity. Studies settlement of structures, shallow and deep foundations, retaining walls and excavations. Cross-listed with CVEN 5738. Prereq: CVEN 3708/3718 and CVEN 3141. Coreq: CVEN 4718/4728. Restriction: Restricted to Civil Engineering majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 4780 - Engineering Geology**

Studies geology as utilized in engineering and environmental practice. Emphasizes a conceptual integration of geologic materials, processes, and rates of change as a basis for successful application of geologic knowledge to environmental planning and engineering design projects. Prereq: MATH 2411 and CVEN 2121. Cross-listed with CVEN 5780 and GEOL 4780, 5780. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 4800 - Special Topics**

Supervised study of special topics of interest to students under guidance of instructor. Prereq: Permission of instructor. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **CVEN 4840 - Independent Study**

This category is intended for topics which students may wish to pursue on their own initiative, with guidance from a professor who agrees to limited consultation on the work and to award credit when the project is completed. Departmental approval is required. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **CVEN 5025 - Autocad Civil 3d & Advanced Civil Engineering Graphics**

Lectures target civil engineering industry specific site information modeling software and geospatial industry specific geographical information systems software to elevate students' knowledge of each software to an in-depth understanding. Laboratory exercises will focus on civil drafting and design, producing documentation, and general project workflows. Additional laboratory exercises will focus on geospatial data creation, data management, and cartographic display. Prereq: CVEN 1025. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5087 - Engineering Contracts**

Laws met by the practicing engineer, types of contracts, specification writing, laws on contracts, agency, partnership, sales and property, with primary emphasis on rights and duties of the engineer. Cross-listed with CVEN 4087. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5110 - Advanced Structural Classical Analysis**

Understanding classical hand-solved analysis techniques in civil and structural engineering. Methods to be studied include: Moment Area, Conjugate Beam, Virtual Work, Stiffness Method, Force Method, Slope Deflection, and Moment Distribution. Prerequisite: CVEN 3505 with B- or better or graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5111 - Structural Dynamics**

Vibration and dynamic response of simple linear and nonlinear structures to periodic and general disturbing forces. Frequency domain analysis, response analysis of multi-degree-of-freedom systems. Wind and earthquake effects. Prereq: CVEN 3505. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5112 - Structural Design Loads**

The course will review the probabilistic approach for load determination used in modern building codes from theoretical and applied perspectives. The course is intended to study dead loads, live loads, snow loads, earthquake loads, wind loads, and load combinations for buildings; and selected topics on bridge loads. Other topics may be treated as time permits. Prereq: CVEN 3505 with a C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5121 - Intermediate Mechanics of Materials**

Intermediate-level course in the mechanics of deformable bodies. Plane stress and strain; stress-strain relation with emphasis on elastic and inelastic behavior of members, and theories of failure. Discussion of basic methods of structural mechanics, with applications to asymmetric and curved beams, thick walled pressure vessels, torsion of members of noncircular section, and other selected problems in stress analysis. Prereq: CVEN 3121, MATH 3191 and 3200, or graduate standing in the College of Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5201 - Construction Dewatering**

Introduction to construction dewatering including removal of ground water and surface water in construction sites, characteristics of groundwater aquifers, groundwater flow, geotechnical investigation of dewatering problems and application of modern dewatering technology. Basic methods for controlling water on a construction project are presented incorporating open flow and pumping of excavations, soil pre-draining, water cutoff and exclusion. Prereq:

Theoretical/applied fluid mechanics, Soil mechanics. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5231 - Construction Materials and Methods**

This course presents information regarding the primary materials and methods used to design and construct the majority of buildings in the United States including concrete, wood and steel. Students explore processes related to the specification, ordering and installation of various construction materials, as well as analyze various materials' performance characteristics. Two important themes are incorporated throughout discussions: sustainability and ethics. In addition to lectures and class activities, students will be asked to research, define, and present information regarding a wide range of material properties and construction processes. Prereq: CEMT 2100 or CVEN 4230 or graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5333 - Surface Water Hydrology**

Fundamentals of hydrology emphasizing surface water processes. Topics include the hydrologic cycle, frequency analysis, drought management, flood routing, rainfall-runoff relationships (rational method, unit hydrograph, and hydrologic software) and hydrologic design. Prereq: B- or better in CVEN 3313 or graduate standing or instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5334 - Groundwater Hydrology**

Topics include groundwater occurrence, hydrologic cycle and budget, interactions with surface waters, principles of groundwater flow, well hydraulics, well field design, regional flow systems, water and pollutant chemistry, computer modeling and groundwater management. Emphasis is on quantitative analysis methods for groundwater resource inventory, design and management. Prereq: B- or better in CVEN 3313 or graduate standing or instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5335 - Vadose Zone Hydrology**

Engineering analysis of the vadose zone, the unsaturated porous media linking the earth surface to groundwater. Darcy's law for flow. Richards equation for moisture content. The advection-dispersion equation for solutes. Analytical solutions and numerical modeling applied to infiltration, evaporation, drainage, and subsurface remediation. Prereq: B- or better in CVEN 3313 or graduate standing or instructor permission. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5336 - Urban Runoff Quality and Quantity Modeling**

This course covers rainfall/runoff data base, rain gage under-catch, statistical models for frequency analysis, Unit Graph and Kinematic Wave method for runoff prediction, urban watershed modeling, event-based flood prediction, continuous flow predictions, modeling consistency and sensitivity, impact assessments, master drainage planning, and storm centering technique. Prereq: CVEN 3323 with a C- or higher and graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **CVEN 5337 - Sustainable Hydraulic System Design**

This course applies the low-impact-development (LID) principles to design stormwater hydraulic structures in urban areas. The major topics in this course will cover storm water quality capture volume, filtering process for water quality control, and infiltration process for on-site stormwater disposal, including porous pavements, vegetation beds, bio swales, rain gardens, and landscaping detention. The computer model, EPA SWMM-LID, will be employed to guide the selection of design parameters and to evaluate the structural performance. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **CVEN 5343 - Open Channel Hydraulics**

Engineering analysis and design of natural and artificial open channels. Application of uniform flow concept to design of erodible and non-erodible channels. Application of energy and momentum principles to conditions of gradually varied flow, spatially varied flow and rapidly varied flow. Prereq: CVEN 3323 or permission of instructor. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **CVEN 5344 - Unsteady Open Channel Hydraulics**

Derivation of basic principles of unsteady open channel flow. Application of kinematic wave, diffusive wave and dynamic wave approaches to open channel, including overland flow and flow in a drainage or river network. Introduction of numerical finite difference methods, characteristic method and simplified analytical method for the solution of unsteady open channel flow problems. Evaluation of computer simulation models such as DWOPER and SWMM. Prereq: CVEN 5343 and CVEN 5333 or permission of instructor. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **CVEN 5345 - Computational Methods for Water Resources**

This course covers two major areas: hydrologic and hydraulic numerical routing schemes. The hydrologic routing includes linear and nonlinear reservoir operations using the characteristic curves derived from the reservoir geometry. The hydrologic routing numerical scheme will be applied to optimize the reservoir operations for power generation, irrigation, and flood control. The hydraulic routing covers Dynamic Flood Wave, Diffusive Wave, and Kinematic Wave. The finite difference method is used to develop numerical models to predict flood flows through

channels. This course also covers probable maximum precipitation and dam break flow analysis. Prereq: CVEN 3323. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5381 - Introduction to Geographic Information Systems**

Provides an overview exposure and experience with various aspects of GIS technology and its uses for natural resource and infrastructure, planning, design and management. This course involves a survey of GIS software and hardware, review of cartographic mapping principles, hands-on applications to environmental impact assessment, municipal facilities management, transportation, water resources and demographics. GIS project management factors are addressed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5382 - Geospatial Data Development**

This second GIS course builds on the introductory course and addresses principles and technologies for development and conversion of spatial databases, including photogrammetry, surveying and geodesy, coordinate systems and transformations, and remote sensing. Prereq: CVEN 5381. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5383 - GIS Analysis -- Theory and Practice**

This third course reviews GIS software functions and terminology, including data entry (input, editing), manipulation (projection, merge, window, aggregate), analysis (map algebra, overlay, Boolean, interpolation network, measurements, distance, terrain modeling, statistical analysis), query (spatial, attribute), and display/reporting. Integration of various domain-specific systems analysis models with GIS databases is also addressed. Laboratory activities involve programming applications using available GIS. Prereq: CVEN 5381. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5384 - GIS Project Management**

This course explains how to build a foundation for GIS project success and deliver results. Topics include data governance, administration of technical infrastructure, managing roles and skills, key leadership concepts, and project management methodologies like Agile/Scrum. Best practices and real world applications are discussed. Also addressed are issues of GIS institutional acceptance, the role of computerized spatial data systems in decision-making, application of planning techniques for accomplishing resource goals, and administrative structures that enhance efficiency of use. Prereq: CVEN 5381. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5385 - GIS Relational Database Systems**

Introduces relational database management system concepts with emphasis on GIS. Includes examination of relational database systems from conceptual design through relational schema

design and physical implementation. Topics include SQL, database design and implementation for large database systems, transaction management, concurrency control, distributed database management systems and the interaction and progressive integration of GIS technologies and RDBMS technologies. Coreq: CVEN 5381. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5386 - GIS Laboratory**

Provides in-depth experience with use and programming of a particular GIS software, including ArcGIS and related object-oriented programming languages. Advanced functionality for user authoring of software interface, data management and analysis functions and output generation. Exact content will vary by semester. Prereq: CVEN 5381. Repeatable. Max Hours: 18 Credits. **Semester Hours:** 3 to 3

### **CVEN 5387 - Advanced Remote Sensing**

Addresses remote sensing concepts including 1) imaging sensors and geo-referencing; 2) image processing for radiometric, multi-spectral image enhancement, and multi-sensor image fusion; and 3) multi-spectral image classification, including feature extraction, supervised and unsupervised classification, and extensions to hyper-spectral data. Prereq: CVEN 5382. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5388 - Site Engineering**

Course introduces the fundamentals of site engineering which require understanding and interpreting landforms, slopes, contour lines, grading, drainage, and earthwork to storm water management, hydrology reports, designing roadways, and street networks. Other topics include designing for ADA and concepts of sustainability in site design. Note: CAD experience is recommended. Cross-listed with CVEN 4388. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5389 - Open Source Desktop Mapping, Modeling & Data Processing**

This graduate-level course covers the open source tools and procedures that students can use for desktop GIS mapping, modelling, and data analysis and preparation that are unique in comparison to other GIS software used in the industry. Prereq: CVEN 5381 Intro to GIS or equivalent permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5390 - Interactive Web Mapping GIS**

This course introduces students to designing, creating, delivering, and using interactive web maps. Many people rely daily on web maps to direct us from point A to point B and more. After starting with a broad introductory background, this is a technical hands-on course in which

students use several open source (FOSS) technologies. Prereq: CVEN 5381 Introduction to GIS or equivalent or permission of the instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5391 - Introduction to Geomatics**

This course presents the concepts of Geomatics along with spatial data, tools, and their connection. This course covers spatial data collection methods, data assessment, and processing. The course also covers projections, methods of coordinate conversion and transformation, and data transfer across different spatial analysis platforms. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5392 - Unmanned Aerial Systems**

This course presents concepts and practical methods of using Unmanned Aerial Vehicles for engineering projects. The course covers mission planning, operations, field data collection and processing, and data analysis. Legal and ethical considerations are also covered, as well as the relative costs and benefits of using UAV. Prereq: CVEN 5391. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5393 - Water Resources Development and Management**

A multidisciplinary exploration of the principles governing water resources planning and development. Emphasis is on the sciences of water (physical, engineering, chemical, biological and social) and their interrelationships. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5395 - GPS/GNSS**

This course presents the practical concepts and implications of using GPS/GNSS for engineering projects. The course covers a variety of techniques for field data collection, processing, and data analysis. The course emphasis is on changes that are occurring because of using GPS/GNSS in the field. Prereq: CVEN 5391. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5396 - HDS/LiDAR Tools & Data Analyses**

High Definition Surveying (HDS) scanners are extremely reliable and accurate geospatial data collection devices for surveyors, GIS analysts, engineers, and planners. The goal of this unique course is to present the instrumentation and technological principals used in data collection, project phases, data processing and analyses. This course is designed to provide information and practical skills for students wanting to learn how to plan and execute terrestrial LIDAR data collection projects with HDS scanners and HDS data processing software. Prereq: CVEN 5381 and CVEN 5395 or equivalent. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5397 - Unmanned Aerial Systems Data processing**



This course will provide information and practical skills for unmanned aerial systems data processing and analyses. The course focuses on sensor selection, ground control, data processing, and data analyses. Prereq: CVEN 5391 and CVEN 5392. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **CVEN 5401 - Introduction to Environmental Engineering**

Provides a broad overview of the environmental engineering and pollution control system. Offers a unique systems approach to environmental engineering, examining the source-to-receptor feedback loop system of pollution control. Process principles underlying pollutant, transport, abatement, and control are presented in a unified manner, cross-cutting atmospheric, wastewater and subsurface systems. Prereq: CHEM 1130, CHEM 2031, or ENGR 1130, and Graduate standing in MSCE or MSES programs or permission of instructor. Cross-listed with CVEN 3401. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5402 - Integrated Environmental Modeling**

Provides unified understanding of fundamental physical, chemical and biological processes that govern the transport and fate of pollutants in environmental systems - water, air and subsurface. The course focuses on multimedia modeling and model solution methods. The course also introduces exposure and risk assessment techniques. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5403 - Environmental Regulations and Management Systems**

Students will receive an overview and understanding of major environmental laws and will be introduced to legal concepts used to develop environmental laws. In addition, students will learn about environmental management systems and their applications to environmental problems. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **CVEN 5404 - Sustainable Water Systems: Physical & Chemical Processes**

A comprehensive course that covers the theory and application of chemical (acid base equilibria, redox reactions, chemical equilibrium and kinetics etc.) and physical processes (sedimentation, filtration, adsorption, membrane separation, reactor design) used in water quality engineering, with an emphasis on sustainable treatment options, looking at social, economic and environmental aspects of these technologies. Since numbers of these technologies are energy intensive, emphasis will be placed on life cycle impacts and energy efficiency of these processes. The lectures will integrate source water quality, local, geographical conditions and regulatory requirements into design of the treatment options. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits. **Semester**

**Hours:** 3 to 3

## **CVEN 5405 - Systems Analysis for Environment and Sustainability**

Focuses on quantitative techniques for environment systems modeling, analysis and assessment. The course primarily covers life cycle assessment (LCA) techniques. The students will learn the various steps for conduction an LCA including goal and scope definition, life cycle inventory (LCI), life cycle impact assessment (LCIA) and interpretation. Mathematical techniques for uncertainty & sensitivity analysis, such as Monte Carlo simulations will be covered. Students will be exposed to several LCA case studies. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 5406 - Engineering and Science Informatics**

Students will learn applied, basic statistics & probability concepts and provide experience in the correct use and interpretation of those techniques. The course is designed in such a way that any graduate or undergraduate level student wanting to learn data analysis will benefit. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 5407 - Complex Systems Modeling for Sustainability Analysis**

This graduate course introduces nonlinear dynamics, information theory, and network analysis in an environmental engineering, earth sciences, and sustainability context. Techniques will be applied to analyze environmental and weather data in addition to other examples relevant to engineering and critical zone science. Prereq: Graduate standing or CVEN 3313 with a B- or better. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 5424 - Field Methods for Sustainable Development: Colombia**

Course will introduce students to international sustainable development in both lab and field work in Colombia, partnering with communities on sustainable development projects across cultures and disciplines both within and outside of engineering, and emphasizing community interaction. Travel fees are required. Note: Personal essay, letter of recommendation, and interview with instructor required. Cross-listed with CVEN 4424. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

## **CVEN 5427 - Storm Water System Design**

This course covers urban watershed analysis, design rainfall and hydrologic losses, flood frequency and design event, rational method for peak runoff prediction, street hydraulic capacity and safety, culvert hydraulics, street inlet collection system, and storm sewer system design and flow analysis. Prereq: CVEN 3323 with a C- or higher. Restriction: Restricted to Civil Engineering majors. Cross-listed with CVEN 4427. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 5434 - Sustainable Water Systems: Biological Processes**

A comprehensive course that covers the theory and application of biological processes used in water quality engineering, with an emphasis on state-of-the-art water pollution control and waste-to-energy technologies. The initial lectures will introduce material on microbial energetics, diversity, and kinetics. The remainder of the course will involve the application of fundamental principles to treatment and energy recovery processes, including bioreactor configurations and design considerations. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5460 - Introduction to Sustainable Urban Infrastructure**

This course takes a systems approach to urban infrastructures that deliver critical materials to cities; primarily water, energy, transportation, buildings, and food systems. The focus is on the current state of sustainable development, cities, and infrastructure systems, exploring sustainability strategies and measuring their effectiveness, and analyzing implementation and diffusion of sustainability strategies. Cross-listed with URPL 6399. Prereq: Graduate standing or instructor permission. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5461 - Defining and Measuring Sustainability**

Unique cross-disciplinary course that teaches students community engagement strategies to define sustainability goals. Life cycle assessment and material flow analysis tools used to measure environmental sustainability benchmarks. Field work applies both tools to cities in Colorado. Cross-listed with URPL 6548. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5464 - Sustainability and Climate Change**

This course explores environmental sustainability in the context of climate change, emphasizing feedbacks and interactions within the climate-ecosystem-water-energy-food system. Course topics include climate and ecosystem modeling, climate data analysis, and testing students' assumptions and inferences regarding various sustainability topics. Prereq: Graduate standing or instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5480 - Hazardous Wastes and Site Remediation**

Students learn to: (1) define and classify hazardous wastes encountered at hazardous waste-contaminated sites, (2) learn basic principles underlying currently available technologies for site remediation, (3) use EPA's technology screening matrix for technology selection, and (4) provide engineering design for selected remediation systems, e.g. ground-waterpump-and-treat, soil vapor extraction, soil washing, and bioremediation. Prereq: CVEN 5402. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5481 - Sustainable Water Systems Policy and Planning**

To provide students with a working knowledge of sustainable urban water systems which are resilient, resource efficient and environment friendly. Students will learn about the various components of urban water and wastewater systems, including water resource management, treatment, transport and reuse, and how to evaluate, develop and design the various components in a sustainable manner. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5494 - Risk Assessment in Environmental Engineering**

The process of determining the likelihood and extent of harm that may result from an activity or event. Topics covered are: hazard identification, dose-response evaluation, exposure assessment, and risk characterization. The subjects of risk management, risk perception, and risk communication are also discussed. Prereq: Graduate standing or permission of instructor. Cross-listed with ENVS 6200, HBSC 7340. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5514 - Matrix Analysis of Structures**

Matrix analysis of skeletal structures. Systematic formulation of stiffness and flexibility methods of analysis of skeletal structures. Application of modern computational tools to structural analysis, including introduction to the finite element method. Prereq: CVEN 3505. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5515 - Introduction to Finite Element Analysis**

Systematic formulation and application of the finite element approximation to the solution of engineering problems. Topics include one- and two-dimensional elasticity problems, two-dimensional heat flow and irrotational fluid flow. Elements considered include triangular and quadrilateral elements formulated by elementary and isoparametric techniques. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5540 - Masonry Design**

Structural analysis and design of masonry structures, combining theoretical principles of mechanics and applied structural engineering. The Strength Method of design will be emphasized. Coreq: CVEN 4585. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5550 - Highway Bridge Design**

Design of highway bridges in accordance with the ASSHTO LRFD Bridge Design Specification. Topic coverage includes bridge planning, construction materials in bridges, bridge systems, design loads, structural modeling and analysis, design of concrete deck system, and design of concrete and steel superstructures. Prereq: CVEN 4575 and CVEN 4585 or graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5565 - Advanced Timber Structure Design**

Design of wood framing systems including beams, columns, trusses, and diaphragms. Wood as a material, framing terminology, connection design, structural composite lumber, glued-laminated members, and plywood are covered. The course will emphasize on preparing students for a career in structural engineering. Prereq: Graduate Standing or (CVEN 3505 and 3141 with a C- or higher and Civil Engineering major). Cross-listed with CVEN 4565. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5575 - Advanced Topics in Structural Steel Design**

Plate buckling, plate girder design and other topics determined by class interest. Prereq: CVEN 4575. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5580 - Design of prestressed concrete structures**

To learn the basic concepts of analysis and design of prestressed concrete, which is essentially reinforced concrete in which steel reinforcement is tensioned against the concrete, thereby introducing compression in concrete and hence overcoming the tensile weakness of concrete relative to its compressive strength. Prereq: CVEN 4585. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5585 - Advanced Topics in Reinforced Concrete**

Advanced topics relating to design and analysis of reinforced concrete structures. Prereq: CVEN 4585. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5590 - Design of Prestressed Concrete**

To learn the basic concepts of analysis and design of prestressed concrete, which is reinforced concrete in which steel is tensioned against the concrete, thereby introducing compression in concrete and hence overcoming the tensile weakness of concrete relative to its compressive strength. Cross-listed with CVEN 4590. Prereq: CVEN 4585 or graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5602 - Advanced Street & Highway Design**

This course delves into the art and science of designing sustainable and context sensitive street and highway facilities. Topics include road classification, transportation planning, road alignments, cross-section design, bicycle and pedestrian facilities, intersections, and street network design. Cross-listed with CVEN 4602. Prereq: Permission of Instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5611 - Transportation Engineering Statistics**

Covers statistical analysis methods for engineering studies in general, and for highway accident and traffic flow data in particular. Topics include data needs, sampling designs, survey methods, hypothesis testing, tests of proportions, non-parametric tests, analysis of variance, multivariate regression, and other tests of fit. Introductory overview of state and federal accident databases. Comparisons of accident rates by highway type, vehicle speeds, vehicle types, weather conditions and other factors also presented. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5612 - Traffic Impact Assessment**

Covers (1) procedures to satisfy state and local requirements for transportation impact studies, (2) methods to perform trip generation, distribution, and traffic assignment for impact analyses, and (3) analysis of transportation impacts on residential communities, mode choice, regional business (downtown or suburban), peak and off-peak travel times, noise, safety, parking and pedestrians. A course project requires students to develop an application of analysis software to a case study area. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5613 - Traffic Simulation Modeling**

This graduate-level course introduces students to the principles, methods, and software needed to perform traffic simulations of alternative transportation modes in urban areas. Students will develop a case study simulation of their choosing. Pre-req: CVEN 5621 Highway Capacity Analysis or equivalent permission of the instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5621 - Highway Capacity Analysis**

Covers the principles and applications of highway capacity analysis for freeways and arterials, ramps and interchanges, weave and merge sections, signalized and unsignalized intersections, roundabouts, pedestrian areas and transit. Emphasis is on level-of-service analysis procedures in the Highway Capacity Manual, although other approaches are also discussed. Additional topics include roadway characteristics, vehicle dynamics, human factors, speed and volume studies, travel time surveys and traffic flow characteristics. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5622 - Traffic Operations and Control**

Covers principles of traffic flow and analysis methods for surface street traffic systems. Emphasis is on network modeling and simulation of coordinated signal systems, together with unsignalized intersections and freeway junctions using modern software tools. Additional topics include alternative signal timing plans, signal controllers, vehicle detection systems for volume, speed, occupancy and ramp metering. A course project requires students to develop and apply

modeling software to a case study area. Prereq: CVEN 5621 or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5631 - Transport Modeling & Big Data**

This graduate-level course introduces students to travel demand modeling as developed over the last 60 years. It covers the fundamentals of conventional models and data needs but also delves into newer "big" data sources and methods that will allow us to observe and analyze transportation in completely new ways. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5632 - Urban Transportation Modeling**

An advanced coverage of urban and regional transportation planning models, procedures and software. Mathematical formulations, properties, and solution algorithms are presented. Additional topics include methods of data acquisition from public domain databases for use in modeling software. A course project requires students to develop an application of modeling software to a case study area. Prereq: CVEN 5631 or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5633 - Case Studies in Sustainable Transportation**

This course examines notable topics in sustainable transportation: demystifies conventional transportation engineering methods; and explores empirical examples of why such methods are often misguided. The intent is to enlighten engineering students and help support planning/policy students interested in transportation sustainability. Prereq: graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5641 - Transit System Design**

This course introduces students to the components of transit system planning and design including station design and accessibility. The course focuses primarily on light rail design, but provides an overview of different transit modes. The instructors of this course have hands-on experience in transit planning, design, and construction. Prereq: graduate standing or permission of instructor. **Semester Hours:** 3 to 3

### **CVEN 5642 - Transit Construction**

This course introduces students to the fundamentals of transit construction necessary for successful project completion. It also covers how many different types of transit projects are managed and sustained. The instructors of this course have hands-on experience in transit construction, scheduling, and project control. Prereq: graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 5652 - Airport Planning and Design**

National airport system plan, air travel demand, geometric design of airport facilities, design of airport pavement and drainage structures, and airport environmental impact. Prereq: CVEN 3602 and graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 5662 - Transportation System Safety**

This is a graduate-level course on road safety that will: investigate contemporary safety analysis techniques; highlight the disconnect between the current safety paradigm and actual safety outcomes; cover driver, bicyclist and pedestrian safety concerns; and discuss notable efforts such as Vision Zero. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 5682 - Pavement Design**

Design of flexible and rigid pavements for highways and airports; stress analysis in flexible and rigid pavements; design of joints and reinforcing steel for rigid pavements; principles of subgrade stabilization. Prereq: CVEN 3141, 3505, and 3708/3718 with a C- or higher, OR graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 5708 - Advanced Soils Engineering**

A unified treatment of the foundation of soil engineering analysis. Topics include stress-strain-strength of soils; generalized limiting equilibrium analysis; stability analyses of earth-retaining structures, slopes, and shallow foundations; probabilistic approach of stability assessment; computation of settlement of foundations in sand and clay and time-rate of consolidation and critical state concept. Special attention is directed toward the illustration of theory through practical examples. Prereq: CVEN 3708 or 3718, and CVEN 4718 or 4728, or Graduate Standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 5709 - Settlement Analysis**

A unified treatment of settlement analysis on sand and clay. Topics include settlement of shallow foundation, settlement of deep foundation, and settlement of embankments, walls and excavations. Conventional methods of analysis and the finite element method of analysis are covered. Critical design implications are emphasized. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 5718 - Engineering Properties of Soils**

Engineering properties of soils, including index properties, permeability, stress-strain behaviors, shear strength, compressibility, critical state soil models and their application in interpreting soil behaviors. Attention also is directed to laboratory and in situ tests to examine the validity



of shear strength and compressibility theories and their application to stability and settlement analysis. Prereq: CVEN 3708 or 3718, and CVEN 4718 or 4728, or Graduate Standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5719 - Design and Construction of Geosynthetic-Reinforced Soil Structures**

Theory of reinforced soil; mechanical and hydraulic properties of geosynthetics; soil-geosynthetic interaction behavior; design concepts of GRS structures; design and construction of GRS retaining walls; design and construction of GRS embankments and slopes; design and construction of GRS foundations. Prereq: CVEN 5708. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5738 - Foundation Engineering**

Methods of subsurface exploration and sampling of soils, lateral support in open cuts, control of groundwater, analysis and design of shallow foundations, analysis and design of deep foundations, bridge abutments and cofferdams, underpinning, and application of modern computational techniques to analysis and design of foundations. Cross-listed with CVEN 4738. Graduate Standing or all of the following: Prereq: CVEN 3708/3718 and CVEN 3141. Coreq: CVEN 4718/4728 Restricted to Civil Engineering majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5758 - Foundations on Expansive Soils**

Expansive soils swell upon wetting because of the swelling nature of constituent clay minerals, particularly montmorillonite. This course studies swelling nature of different clay minerals, effects of wetting, swelling potential, swelling pressures, and design of different foundation systems. Prereq: CVEN 4738, B.S.C.E. or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5768 - Introduction to Rock Engineering**

Nature of rock masses, geological exploration, deformability and strength, in situ stresses and deformation, rock hydraulics. Prereq: CVEN 3708 or 3718, and CVEN 4718 or 4728, or Graduate Standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 5780 - Engineering Geology**

Studies geology as utilized in engineering and environmental practice. Emphasizes a conceptual integration of geologic materials, processes, and rates of change as a basis for successful application of geologic knowledge to environmental planning and engineering design projects. Prereq: MATH 2411 and CVEN 2121. Cross-listed with CVEN 4780 and GEOL 4780/5780. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 5798 - Dynamics of Soils and Foundations**

Principles of vibrations of, and wave propagation in, elastic, homogeneous, isotropic media; laboratory and in situ measurements of soil properties; applications of these principles and properties to the design of foundations subject to dynamic loading generated by machinery, earthquakes, or blasts. Prereq: CVEN 5708, 5718, and graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CVEN 5800 - Special Topics**

Topical courses offered once or on irregular intervals. Typical topics include: computer-aided structural engineering, pre-stressed concrete, non-matrix structural analysis, geotechnical aspects of hazardous waste management, geographic information systems and facility management, groundwater hydrology, engineering project management, structural planning, engineering practice, spreadsheet application, field instrumentation, hazardous wastes engineering, bridge super and substructure design, advanced steel design, hydraulic transients, foundations -- expansive soils, sludge process design. Prereq: Variable. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

## **CVEN 5840 - Independent Study**

Available only through approval of the graduate advisor. Subjects arranged to fit needs of particular student. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **CVEN 5939 - Internship**

Max Hours: 3 Credits. **Semester Hours:** 1 to 3

## **CVEN 5950 - Master's Thesis**

Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

## **CVEN 5960 - Master's Report**

Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

## **CVEN 6111 - Dynamics of Structures**

Linear and nonlinear dynamic matrix analysis of multi-degree-of-freedom structural systems. Analysis and design for wind and earthquake loads including modal analysis and sub structuring

techniques. Computer programming. Prereq: CVEN 5111. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 6131 - Theory of Elasticity**

Mathematical theory of elasticity and its applications to engineering problems. Discussion of the basic analytical and numerical methods of solutions. Prereq: CVEN 5121. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 6165 - Buckling in Structures**

Buckling of columns, beams, frames, plates, and shells in the elastic and plastic range. Post-buckling strength of plates. Beam-columns. Analysis by exact and approximate methods with special emphasis on practical implications and application of solutions. Prereq: CVEN 3121. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 6336 - Urban Flood Control System Design**

This course covers urbanization impact on watershed regime, flood control measures, detention and retention system, infiltration basin, sand filter, water quality control basin, wetland preservation, storm water Best Management Practices, low impact development, outlet structure design, pond safety, stream restoration, overflow risk analysis and optimal operation. Prereq: CVEN 5333, 5343 and graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 6738 - Finite Element Method in Geotechnical Engineering**

Topics covered include: review of finite element methods, advantages and limitation of FEM for analysis of geotechnical engineering problems, one- and two-dimensional seepage analysis, consolidation analysis, incremental and iterative procedures in nonlinear analysis, no-tension analysis, simulation of construction sequence, simulation of soil behavior, simulation of interface behavior, and load-displacement analysis of earth structures. Prereq: CVEN 5708 and 5515 or consent of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CVEN 6840 - Independent Study**

Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **CVEN 7800 - Special Topics**

Credit and subject matter to be arranged. Prereq: Variable. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **CVEN 7840 - Independent Study**

Available only through approval of the graduate advisor. Subjects arranged to fit needs of particular student. Repeatable. Max Hours: 6 Credits. **Semester Hours: 1 to 3**

### **CVEN 7990 - Doctoral Dissertation**

Repeatable. Max hours: 10 Credits. **Semester Hours: 1 to 10**

### **CVEN 8990 - Doctoral Dissertation**

Repeatable. Max hours: 15 Credits. **Semester Hours: 1 to 15**

### **CLAS Interdepartmental**

#### **CLAS 2939 - Entering Research Internship**

Repeatable. Max Hours: 9 Credits. **Semester Hours: 1 to 3**

#### **CLAS 3939 - Internship**

Prereq: Students must have junior standing and at least a 2.75 GPA and must work with Experiential Learning Center advising to complete a course contract and gain approval.

Repeatable. Max Hours: 9 Credits. **Semester Hours: 1 to 6**

#### **CLAS 4840 - Independent Study: CLAS**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Repeatable. Max Hours: 12 Credits.

**Semester Hours: 1 to 3**

### **Commodities**

#### **CMDT 4582 - Commodity Supply Chain Management**

This course introduces the design, analysis, management, and control of supply chains as applied to commodities. The course covers integration of processes and systems, relationship management of upstream and downstream supply chain players, and commodity- specific supply chain strategies. Cross-listed with CMDT 6582. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours: 3 to 3**

#### **CMDT 4682 - Commodity Valuation and Investment**

This course is a practical introduction to commodity markets. Students will learn how commodities are managed in the global markets from a hedgers, speculators and arbitrageurs

point of view. Understanding the relationships between commodities and the global economy will be investigated. In addition, commodities will be looked at as an asset class and cross-asset relationships will be studied. Students will be introduced to futures and options markets analysis deploying strategies professional traders use in diverse market conditions. Students will work with the various trading software throughout the course and gain proficiency in real-world trading. Cross-listed with CMDT 6682. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CMDT 4782 - Commodity Data Analysis**

This course is an applied introduction to commodity data analysis. Students will learn how to analyze commodity prices using quantitative techniques. Relationships between commodities and the global economy will be investigated. In addition, commodities will be looked at as an asset class and cross-asset relationships will be studied. Students will be introduced to forecasting techniques and be able to develop and evaluate various forecasting models. Students will work with the open source R software environment throughout the course and gain proficiency. Cross-listed with CMDT 6782. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CMDT 4802 - Foundations of Commodities**

This course introduces students to the physical aspects of commodities and connects them to the financial markets in which commodities are traded. Fundamental concepts and terminology necessary for understanding commodity production, transportation, economics, financial analysis and marketing are described. Supply chains for several specific commodities are reviewed in detail, as examples of the production and market structure knowledge needed to be successful professional participants in commodity trading capacities. The course also serves a foundation for more focused education in the specific commodity sectors, as well as the applied use of marketing and financial trading concepts learned in other courses. Cross-listed with CMDT 6802 and FNCE 4802/6802. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CMDT 6582 - Commodity Supply Chain Management**

This course introduces the design, analysis, management, and control of supply chains as applied to commodities. The course covers integration of processes and systems, relationship management of upstream and downstream supply chain players, and commodity-specific supply chain strategies. Cross-listed with CMDT 4582. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CMDT 6682 - Commodity Valuation and Investment**

This course is a practical introduction to commodity markets. Students will learn how commodities are managed in the global markets from a hedgers, speculators and arbitrageurs point of view. Understanding the relationships between commodities and the global economy

will be investigated. In addition, commodities will be looked at as an asset class and cross-asset relationships will be studied. Students will be introduced to futures and options markets analysis deploying strategies professional traders use in diverse market conditions. Students will work with the various trading software throughout the course and gain proficiency in real-world trading. Note: Students cannot receive credit for both CMDT 6482 or FNCE 6482. Cross-listed with CMDT 4682. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CMDT 6782 - Commodity Data Analysis**

This course is an applied introduction to commodity data analysis. Students will learn how to analyze commodity prices using quantitative techniques. Relationships between commodities and the global economy will be investigated. In addition, commodities will be looked at as an asset class and cross-asset relationships will be studied. Students will be introduced to forecasting techniques and be able to develop and evaluate various forecasting models. Students will work with the open source R software environment throughout the course and gain proficiency. Cross-listed with CMDT 4782. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CMDT 6802 - Foundations of Commodities**

This course introduces students to the physical aspects of commodities and connects them to the financial markets in which commodities are traded. Fundamental concepts and terminology necessary for understanding commodity production, transportation, economics, financial analysis and marketing are described. Supply chains for several specific commodities are reviewed in detail, as examples of the production and market structure knowledge needed to be successful professional participants in commodity trading capacities. The course also serves a foundation for more focused education in the specific commodity sectors, as well as the applied use of marketing and financial trading concepts learned in other courses. Cross-listed with CMDT 4802 and FNCE 4802/6802. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Communication**

### **COMM 1001 - Presentational Speaking**

Theory and practice of presentational speaking in a variety of contexts to accomplish goals of asserting individuality, building community, securing adherence, discovering knowledge and belief, and offering perspectives. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 1011 - Fundamentals of Communication**

Studies communication theory and application. Topics include communication models, interpersonal communication and the concept of self, nonverbal communication, message preparation and analysis, and decision making. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS3. **Semester Hours:** 3 to 3

### **COMM 1021 - Introduction To Media Studies**

Explores the role of contemporary media in shaping our sense of ourselves and our world. The class surveys a broad array of critical approaches to understanding media. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS3. **Semester Hours:** 3 to 3

### **COMM 1041 - Interpersonal Communication**

Focuses on the theory and development of interpersonal relationships. Issues covered include the communication process, self versus others, self-esteem, person perception, the attraction process, nonverbal communication, relationship development and family communication. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 1071 - Introduction to Journalism**

Introduction to Journalism provides students a broad overview of the histories of, debates within, and best practices for journalism in print, digital, and other media. This is a writing intensive course. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 1111 - First Year Seminar**

Restriction: Restricted to Freshman level students. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **COMM 2020 - Communication, Citizenship, and Social Justice**

Introduction to debates about and means of practicing citizenship and social justice. Issues may include democratic participation, electoral politics, community engagement, and civil rights. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 2030 - Digital Democracy**

Constant technological innovation means most Americans experience democracy in online formats; this class equips students with tools for living in our digital age. Topics include analyzing websites, studying online political organizing, and learning how to produce materials for online advocacy. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 2045 - Workplace Communication**

Focuses on theories and practices of leadership, teambuilding, relationship development and other workplace communication skills. The goal of the course is to help students develop advanced communication strategies for managing workplace challenges. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 2050 - Business and Professional Speaking**

Development of communication skills often used in business and professional settings, with an emphasis on various kinds of presentations. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 2051 - Introduction to Strategic Communication**

Provides students foundational skills of marketing & public relations, targeted political messaging, and organizational communication, merging theory & practices to study how strategic communication works in different media environments. Students will not receive credit for this class if they have already received credit for COMM 4635. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 2071 - Media Writing Skills**

A survey course covering the major media writing types including: hard or straight news, features, review, editorials, web content, and social media, plus notetaking, interviewing, and editing skills, and an examination of media bias. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 2075 - Researching and Writing in Comm**

This on-line class enables students to learn the research and writing skills that will enable them to excel in the rest of the classes they take to complete the Communication major. Because the course is intended for Communication majors, our readings and modes of analysis provide students an overview of the discipline in general and of the "Pathways" that structure our major. The class is writing intensive. Term offered: spring, summer, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 2081 - New Media Production and Management**

This course develops knowledge and skills in producing, distributing, and managing engaging new media content using the latest digital communication platforms. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 2082 - Introduction to Environmental Communication**



Intro to Environmental Communication provides students with the foundations for analyzing public debates about environmental sustainability, global warming, economic development, corporate responsibility, and activist movements. Emphasis is placed on representations of these issues in TV, films, music, blogs, and public deliberation. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 2500 - Introduction to Health Communication**

Health industries are among the fastest growing sectors of the U.S. economy; this class enables students to begin thinking about their health, the health of their communities, and the health of the nation as systems of language and power. Term offered: fall. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **COMM 3230 - Chinese Communication & Culture in Context**

This course is designed for CU Denver students studying at the ICB program in Beijing. For such students, the course introduces Chinese communication practices & cultural expectations, easing the student's transition into life in Beijing. Field trips are required & will be announced 1st day of class. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 3231 - Famous U.S. Trials**

This introduction to the history of the U.S. trial court system will contextualize significant trials in historic and cultural moments. The course will explore the roles of legal communication and mass communication in contemporary and subsequent representations of the trial. Cross-list HIST 3231. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 3271 - Communication and Diversity**

Explores the complexities of communication across diverse identities such as race, ethnicity, and gender. Course attempts to seek solutions via sharing meaning and discovering common ground. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Term offered: fall, spring, summer. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **COMM 3275 - Family Communication**

Explores family communication processes in traditional and nontraditional families through examination of theories and research on the family. Topics include conflict, family secrets, decision-making, and practical guidelines for improved communication in families. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 3650 - Media and Society**

Approaches communication from a historical perspective, examining how major revolutions in communication technologies have influenced and impacted society over time. Term offered: fall, spring, summer. Prereq: COMM 1021 with a C- or higher or permission from the instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 3660 - Social Media for Social Change**

Students analyze new social media platforms in terms of their textual and visual content, their software structure, and their interactive features, thus learning how to analyze and produce online content intended to spur social change. Prereq: Students must have completed COMM 1011 and COMM 2020 with a C- or higher, or receive permission from the instructor, to enroll in this course. Term offered: fall, spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 3840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **COMM 3939 - Internship**

Applies communication or technical communication concepts and skills in supervised employment situations. Note: This course fulfills the communication department's exit class requirement. Prereq: Students must have completed 15 credit hours at CU Denver and have a 2.75 GPA overall and must work with the Experiential Learning Center advising to complete a course contract and gain approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **COMM 4000 - Communication and Sport**

Examines the language and imagery used in sporting discourse. Considers how sports reflect and refract culture, both positively and negatively. Cross-list COMM 5000. Term offered: fall, spring. Restriction: Restricted to students with junior standing or higher or permission from the instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4021 - Perspectives on Rhetoric**

Introduces major theories of rhetoric from classical through contemporary times, including the theories of Aristotle, Cicero, I. A. Richards, Kenneth Burke, Michel Foucault and Jurgen Habermas. Cross-listed with COMM 5021. Term offered: fall, spring, summer. Restriction: Restricted to students with junior standing or higher or permission from the instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4040 - Communication, Prisons, and Social Justice**

Examines the U.S. prison-industrial complex and enables students to envision ways of reducing crime and improving democracy by engaging in community service. Note: This course fulfills the communication department's exit class requirement. Strongly Recommended: Students complete COMM 2020 or COMM 2030 prior to taking this class. Cross-listed with COMM 5040. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4051 - Advanced Strategic Communication**

Provides senior-level training in hands-on communication environments where targeted messaging seeks specific outcomes. All students complete projects for community group, media outlet or corporation they choose. Students will not receive credit for this class if they have already received credit for COMM 4640. Note: This course fulfills the communication department's exit class requirement. Prereq: Students must have completed COMM 2051 or COMM 2071 or COMM 3680 with a C- or higher, or receive permission from the instructor, to enroll in this course. Cross-listed with COMM 5051. Term offered: fall, spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4240 - Organizational Communication**

Addresses the relationships among such communication factors as flow, media, channel, diversity, information delivery and organization functioning, morale, and productivity. Stresses functional workplace skills and practices. Cross-listed with COMM 5240. Term offered: fall, spring. Restriction: Restricted to students with junior standing or higher or permission from the instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4255 - Negotiations and Bargaining**

Designed to allow students to study theories and apply concepts that explain the influences of various forms of mediating, reducing, and/or resolving conflict among individuals, groups, organizations, nations and cultures. Cross-listed with COMM 5255. Term offered: summer. Restriction: Restricted to students with junior standing or higher or permission from the instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4260 - Communication and Conflict**

Studies the influence of communication on intrapersonal, interpersonal, intragroup and intergroup conflict situations. Cross-listed with COMM 5260. Term offered: fall, spring, summer. Restriction: Restricted to students with junior standing or higher or permission from the instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4262 - Mediation**

Explores theoretical and practical aspects of mediation in a variety of contexts ranging from divorce mediation to labor-management disputes. Cross-listed with COMM 5262. Term offered: fall, spring, summer. Restriction: Restricted to students with junior standing or higher or permission from the instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4270 - Intercultural Communication**

Examines the philosophy, process, problems, and potentials unique to communication across cultural boundaries. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Cross-listed with COMM 5270. Term offered: fall, spring. Restriction: Restricted to students with junior standing or higher or permission from the instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4282 - Environmental Communication**

Studies the communication processes involved in policies and practices affecting natural and human environments. Cross-listed with COMM 5282. Term offered: spring. Prereq: COMM 2082 with a C- or higher permission from the instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4430 - Communication, China, and the US**

This course provides a senior-level opportunity to study how China & the USA have spoken about and to each other, from the Opium War through the Cyber Wars, thus situating this nation in a world of globalizing communication. Note: this course fulfills the communication department's exit class requirement. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Cross-listed with COMM 5430. Term offered: fall. Restriction: Restricted to students with junior standing or higher or permission from the instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4500 - Health Communication**

Examines the role of communication in a wide range of health contexts. Topics include cultural constructions of health and illness, public health communication campaigns, client-provider interactions, telemedicine, community-based health programs and medical journalism. Note: This course fulfills the communication department's exit class requirement. Cross-listed with COMM 5500. Term offered: fall, spring. Restriction: Restricted to students with junior standing or higher or permission from the instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4525 - Health Communication and Community**

This course provides a broad knowledge base about health disparities and culturally competent frameworks in healthcare by enabling students to engage in service learning projects with local health-related community groups. Note: this course fulfills the communication department's

exit class requirement. Term offered: spring. Prereq: COMM 2020 or COMM 2030 or COMM 2050 with a C- or higher or permission from the instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4550 - Rhetorics of Medicine & Health**

This senior seminar/bridge class investigates persuasion in contemporary medicine/health care from clinical settings through mass media. Case studies explore contagion, health policy, the body, death, and biopower. The course requires extensive discussion of readings and an original research project. Note: This course fulfills the communication department's exit class requirement. Cross-listed with COMM 5550. Restriction: Restricted to students with junior standing or higher or permission from the instructor. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4558 - Digital Health Narratives**

This course blends readings, discussions and activities about health narratives with digital media production skills to teach students how to create compelling digital stories about health-related topics. Note: this course fulfills the communication department's exit class requirement. Cross-listed with COMM 5558. Restriction: Restricted to students with junior standing or higher or permission from the instructor. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4575 - Designing Health Messages**

Examines the roles of communication in the design and impact of health messages/campaigns. We will design and assess health communication messages/campaigns in a participatory, process-oriented way using varied communication tools. Prereq: COMM 2500 with a C- or higher or instructor permission. Cross-listed with COMM 5575. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4601 - You Are What You Eat: Food as Communication**

Because food provides a communication channel for much of who we are as individuals, as a community and as a society this course analyzes food as a form of communication. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Cross-listed with COMM 5601. Restriction: Restricted to students with junior standing or higher or permission from the instructor. Term offered: fall, spring, summer. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4610 - Communication, Media, and Sex**

Develop the tools to think critically about representations of sexuality and to understand the social construction of sexuality, the role of sexual representations in mass media and society,

and the complex relationships between sexual acts, identities, and desires. Restriction: Restricted to class level Junior, Senior, or permission of instructor. Cross-listed with WGST 4610. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4611 - Rhetoric of Global Food Policy**

This course examines stakeholder relations, agendas, and debates about global food policy using rhetorical concepts and analysis. Topics include the framing of debates about agriculture, hunger and obesity, the greening of food governance, sustainable food systems, and more. This course fulfills the communication department's pathway course requirement. Cross-listed with INTS 4611. Prereq: Junior standing or higher. Term offered: spring, fall. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **COMM 4621 - Visual Communication**

Explores the social, cultural, and behavioral effects of visual images in a variety of contexts, including graffiti, film, advertising, art and architecture. Cross-listed with COMM 5621. Prereq: COMM 1021 with a C- or higher. Term offered: spring. Max Hours: 3 Credits. **Semester**

**Hours:** 3 to 3

### **COMM 4660 - Queer Media Studies**

Queer Media Studies is a discussion-based, writing-intensive seminar that examines the history and development of U.S. LGBTQI media by focusing on media texts and production, sociocultural context, and media reception. Cross-listed with COMM 5660, WGST 4660, WGST 5660. Restriction: Restricted to students with junior standing or higher or permission from the instructor. Term offered: fall, spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4665 - Principles of Advertising**

Provides a fundamental understanding and appreciation of advertising in today's global society, including consumer motivation, buying behavior, research, creative development and media planning. Cross-listed with COMM 5665. Prereq: COMM 1021 with a C- or higher. Term offered: fall, spring, summer. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 4682 - Political Communication**

Examines the communication processes involved in mediated political events. Topics include the stages of the campaign process, media coverage of the political campaign process, and literacy skills needed to understand political advertising. Cross-listed with COMM 5682. Prereq: COMM 2020 or COMM 2030 with a C- or higher. Term offered: fall. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

### **COMM 4700 - Thesis and Project Practicum**

Focuses on strategies of research design and writing for undergraduate students working on theses for Latin honors and for master's students seeking to complete a major research paper or thesis. Note: This course fulfills the communication department's exit class requirement. Cross-listed with COMM 6700. To be eligible to enroll in this course you must be a senior majoring in communication, have a cumulative GPA of 3.0 and have a GPA in your communication coursework of 3.5. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **COMM 4710 - Topics in Communication**

Special classes for faculty-directed experiences examining communication issues and problems not generally covered in the curriculum. Cross-listed with COMM 6710. Term offered: fall, spring, summer. Repeatable. Max hours: 15 Credits. **Semester Hours: 1 to 3**

### **COMM 4720 - Dynamics of Global Communication**

Explores the word "global" in a communication context by analyzing the relationships between world media, international events, economics and the geopolitics of culture. This analysis is supported by the application of mass, human and cultural communication theory. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Cross-listed with COMM 5720. Restriction: Restricted to students with junior standing or higher or permission from the instructor. Term offered: fall, spring. Max Hours: 3 Credits. **Semester Hours: 3 to 3**

### **COMM 4760 - New Media and Society**

This course examines the relationship between new media (such as the internet and mobile phones) and society. Students will investigate the social and cultural aspects of communication technologies. Cross-listed with COMM 5760. Prereq: COMM 1021 and COMM 2020 with a C- or higher. Term offered: fall, spring. Max Hours: 3 Credits. **Semester Hours: 3 to 3**

### **COMM 4840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Prereq: Permission of instructor. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits. **Semester Hours: 1 to 3**

### **COMM 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course

expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **COMM 4995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Term offered: fall, spring, summer. Repeatable. Max hours: 15 Credits. **Semester Hours:** 1 to 15

### **COMM 5000 - Communication and Sport**

Examines the language and imagery used in sporting discourse. Considers how sports reflect and refract culture, both positively and negatively. Cross-list COMM 4000. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5015 - Communication and Civility**

Examines the central role of communication in the creation and humane society. The definition, understanding, and practices of civility in public discourse and in professional, social, and personal relationships are explored. Film, literature, music, and other texts are utilized to illustrate key concepts and serve as catalysts for discussion. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5020 - Feminist Perspectives on Communication**

Introduces the communication theories of major feminist theorists such as Mary Daly, Bell Hooks, and Sonia Johnson, with a focus on how their theories challenge and transform current understandings of communication. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4020. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5021 - Perspectives on Rhetoric**

Introduces major theories of rhetoric from classical through contemporary times, including the theories of Aristotle, Cicero, I. A. Richards, Kenneth Burke, Michel Foucault and Jurgen Habermas. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4021. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5022 - Critical Analysis of Communication**



Surveys research methods used to analyze messages from rhetorical and critical perspectives. Prereq: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4022. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5040 - Communication, Prisons, and Social Justice**

Examines the U.S. prison-industrial complex and enables students to envision ways of reducing crime and improving democracy by engaging in community service. Note: This course fulfills the communication department's exit class requirement. Cross-listed with COMM 4040. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. COMM 2020 is recommended preparation for this course. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5051 - Advanced Strategic Communication**

Provides senior-level training in hands-on communication environments where targeted messaging seeks specific outcomes. All students complete projects for community group, media outlet or corporation they choose. Students will not receive credit for this class if they have already received credit for COMM 5640. Cross-listed with COMM 4051. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5082 - Wilderness Communication**

The primary goal of this course is to engage issues of wilderness, communication, and environmental sustainability. Students will read philosophical, theoretical, and academic literature on human symbolic constructions of wilderness. Cross-listed with COMM 4082. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5111 - Theories of Leadership**

Examines research and applications related to the major theories of leadership. Emphasizes a critical reading of research confirming or denying various theories, and stresses the historical development of theories of leadership behavior and characteristics. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4111. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5140 - Argumentation**

Examines classical through contemporary theories, with special attention to types of propositions, burden of proof, analysis of issues, evidence, reasoning, fallacies, case constructions, refutation and ethics. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5205 - Empirical Research Methods for Communication**

Provides exposure to empirical research methods involved in communication research: surveys, experimental design, research reviews and meta-analysis, case study, ethnography, textual analysis, process tracing, others. Basic quantitative data analysis methods (correlation, chi-square, t-tests, ANOVA) are introduced. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5215 - Ethics in Communication**

Designed to help students identify and address the daily ethical challenges that occur in private, social, and professional contexts. Focus is on recognizing, analyzing, and resolving real-world ethical dilemmas using diverse approaches to ethical decision making. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4215. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5221 - Research Methods: Qualitative**

Applies qualitative research methods to human communication practices, including the processes of designing qualitative studies, collecting data, analyzing and interpreting data, and reporting results. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4221. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5230 - Nonverbal Communication**

Studies nonverbal behaviors that accompany or replace verbal communication, including macrospace, proxemics, kinesics, facial expression, eye contact, gestures, vocal characteristics, touch and personal adornment. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4230. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5240 - Organizational Communication**

Addresses the relationships among such communication factors as flow, media, channel, diversity, information delivery and organization functioning, morale, and productivity. Stresses functional workplace skills and practices. Restriction: Restricted to Graduate and Graduate Non-

Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4240. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **COMM 5245 - Advanced Organizational Communication**

Explores critical theoretical perspectives on communication in complex organizations, including issues and standpoints that have not been included in mainstream theory and research. Analyzes assumptions and pragmatic solutions associated with these theories. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4245. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **COMM 5250 - Difference Matters and Organizational Communication**

Explores theoretical and practical issues regarding relationships between communication processes in contemporary U.S. organizations and socially constructed aspects of individuals' identity (e.g., race, gender, sexual orientation, class, ability and age). Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **COMM 5255 - Negotiations and Bargaining**

Designed to allow students to study theories and apply concepts that explain the influences of various forms of mediating, reducing, and/or resolving conflict among individuals, groups, organizations, nations and cultures. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4255. Max Hours: 3 Credits. **Semester Hours: 3 to 3**

### **COMM 5260 - Communication and Conflict**

Studies the influence of communication on intrapersonal, interpersonal, intragroup and intergroup conflict situations. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4260. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **COMM 5262 - Mediation**

Explores theoretical and practical aspects of mediation in a variety of contexts ranging from divorce mediation to labor-management disputes. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4262. Max hours: 3 Credits. **Semester Hours: 3 to 3**

## **COMM 5265 - Gender and Communication**

Examines gender as it is constructed, performed, evaluated, and negotiated through communication. Topics covered include the nature of gender, the gender binary, scientific research on gender, gender stories in popular culture, the process of crafting and performing gender stories, and responses to gender performances. Cross-listed with COMM 4265. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 5268 - Communication and Diversity in U.S. History**

Explores issues of diversity and community in the construction of U.S. culture. Emphasis on legal and historical texts that codify or challenge majoritarian notions of difference and systems of social control. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4268. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 5270 - Intercultural Communication**

Examines the philosophy, process, problems, and potentials unique to communication across cultural boundaries. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4270. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 5280 - Communication and Change**

Examines the role of communication in change processes of various kinds, including social change and diffusion of innovations. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4280. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 5282 - Environmental Communication**

Studies the communication processes involved in policies and practices affecting natural and human environments. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4282. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 5290 - Web Design**

Covers writing web pages in HTML, beginning Photoshop, style sheets, bitmapped animations, issues of usable layout, navigability, structure, typography, and color on the web. Projects

require students to develop static web sites. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4290. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5300 - Multimedia Authoring**

Analysis and evaluation of components of multimedia development and hands-on instruction featuring computer animation for advertising, training, and educational projects. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4300. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5430 - Communication, China, & the US**

This course provides a senior-level opportunity to study how China & the USA have spoken about and to each other, from the Opium War through the Cyber Wars, thus situating this nation in a world of globalizing communication. Note: this course fulfills the communication department's exit class requirement. This course may count for the International Studies major or minor. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Cross-listed with COMM 4430. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5500 - Health Communication**

Examines the role of communication in a wide range of health contexts. Topics include cultural constructions of health and illness, public health communication campaigns, client-provider interactions, telemedicine, community-based health programs and medical journalism. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4500. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5550 - Rhetorics of Medicine & Health**

This senior seminar/bridge class investigates persuasion in contemporary medicine/health care from clinical settings through mass media. Case studies explore contagion, health policy, the body, death, and biopower. The course requires extensive discussion of readings and an original research project. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with COMM 4550. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5558 - Digital Health Narratives**

This course blends readings, discussions and activities about health narratives with digital media production skills to teach students how to create compelling digital stories about health-related topics. Cross-listed with COMM 4558. Restriction: Restricted to Graduate and Graduate

Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5575 - Designing Health Messages**

Examines the roles of communication in the design and impact of health messages/campaigns. We will design and assess health communication messages/campaigns in a participatory, process-oriented way using varied communication tools. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with COMM 4575. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5600 - Media Theory**

Surveys a broad array of critical and interpretive approaches to the study of media. Approaches include political economic, semiotic, rhetorical, psychoanalytic, feminist, and cultural. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Cross-listed with COMM 4600. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5601 - You Are What You Eat: Food as Communication**

Because food provides a communication channel for much of who we are as individuals, as a community and as a society this course analyzes food as a form of communication. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Cross-listed with COMM 4601. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5620 - Health Risk Communication**

Acquaints students with contemporary theory, research, and practice in health risk communication. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4620, ENVS 5620, and PBHL 4620. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5621 - Visual Communication**

Explores the social, cultural, and behavioral effects of visual images in a variety of contexts, including graffiti, film, advertising, art and architecture. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4621. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 5660 - Queer Media Studies**

Queer Media Studies is a discussion-based, writing-intensive seminar that examines the history and development of U.S. LGBTQI media by focusing on media texts and production, sociocultural context, and media reception. Cross-listed with COMM 4660, WGST 4660, WGST 5660. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 5665 - Principles of Advertising**

Provides a fundamental understanding and appreciation of advertising in today's global society, including consumer motivation, buying behavior, research, creative development and media planning. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4665. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 5680 - Mass Communication Law and Policy**

Covers issues of mass communication and the law and ethics, including issues of the First and Fourth Amendments, communication regulations, intellectual property, public access and obscenity. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with COMM 4680. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 5681 - Communication Issues in Trial Court Practices and Processes**

Introduces students to communication and language research aimed at improving the fairness, reliability, and validity of court and judicial processes, including lawyer-client interviews, interrogatories, jury selection, jury instructions, witness examination, and the use of language evidence in court. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with COMM 4681. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 5682 - Political Communication**

Examines the communication processes involved in mediated political events. Topics include the stages of the campaign process, media coverage of the political campaign process, and literacy skills needed to understand political advertising. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with COMM 4682. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COMM 5720 - Dynamics of Global Communication**

Explores the word "global" in a communication context by analyzing the relationships between world media, international events, economics and the geopolitics of culture. This analysis is supported by the application of mass, human and cultural communication theory. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-list COMM 4720. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5750 - Legal Reasoning and Writing**

Introduces the fundamentals of legal reasoning and legal argumentation through intensive class discussion, formal debate and writing. Attention is given to the relationship between case and statutory law and their application in trial and appeals courts in the United States. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with COMM 4750, PSCI 4757, 5747. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5760 - New Media and Society**

This course examines the relationship between new media (such as the internet and mobile phones) and society. Students will investigate the social and cultural aspects of communication technologies. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with COMM 4760. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 5840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Permission of instructor. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **COMM 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **COMM 5939 - Internship**

Applies communication or technical communication concepts and skills in supervised employment situations. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations,



assignments and outcomes, to the Graduate School for approval. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **COMM 5995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Term offered: fall, spring, summer. Max hours: 15 Credits. **Semester Hours:** 1 to 15

### **COMM 6013 - Introduction to Graduate Work in Communication**

Designed to familiarize students with the philosophical, ideological, and methodological bases of study in communication. Note: Required of all graduate students in M.A. program in communication. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 6200 - Communication and Critical Theory**

This course offers students an introduction to the intellectual history and current status of the relationship between communication and critical theory; canonical thinkers (Marx, Freud, Adorno, etc.) are coupled with contemporary communication scholars who work on questions of social justice. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 6400 - Communication, Globalization and Social Justice**

This course offers students an introduction to the intersections of communication as a discipline, globalization as a world process, and social justice as a contested, ever-evolving goal of activists. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 6700 - Thesis and Project Practicum**

Focuses on strategies of research design and writing for undergraduate students working on theses for Latin honors and for master's students seeking to complete a major research paper or thesis. Cross-listed with COMM 4700. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COMM 6710 - Topics in Communication**

Special classes for faculty-directed experiences examining communication issues and problems not generally covered in the curriculum. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with COMM 4710. Term offered: fall, spring. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 1 to 3

### **COMM 6950 - Master's Thesis**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 6

### **COMM 6960 - Master's Project**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 1 to 3

## **Computer Science**

### **CSCI 1001 - Computer Forensics I**

Topics covered: how to conduct a computer forensic exam; how an individual can hide data on a computer; how the investigator can find that hidden data. This course will also incorporate hands-on learning through the use of a forensic software package. (Non-CS majors) Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 1350 - Introduction to Computing in Society**

This is an introductory course for individuals who would like to learn about the field of computer science, how modern computing is affecting society, and the basics of computer programming. We will explore how computing has changed society, how intertwined in our daily lives computer programs have become, and how these programs are created. We will explore these topics while learning the basics of computer programming with a modern programming language. Prereq: High School Algebra. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 1410 - Fundamentals of Computing**

First course in computing for those who will take additional computer science courses. Covers the capabilities of a computer, the elements of the computer language C++, and basic

techniques for solving problems using a computer. Coreq: CSCI 1411. Max hours: 3 Credits.  
**Semester Hours:** 3 to 3

### **CSCI 1411 - Fundamentals of Computing Laboratory**

This laboratory is taken with CSCI 1410 and will provide students with additional help with problem solving and computer exercises to compliment the course material covered in CSCI 1410. Coreq: CSCI 1410. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **CSCI 1510 - Logic Design**

The design and analysis of combinational and sequential logic circuits. Topics include binary and hexadecimal number systems, Boolean algebra and Boolean function minimization, and algorithmic state machines. Lecture/lab includes experiments with computer-aided design tools. This course requires the level of mathematical maturity of students ready for Calculus I. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 1800 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **CSCI 2002 - Computer Forensics II**

This is a continuation of CSCI 1001 This course will cover: computer forensics for advanced operating systems (Mac, Linux, and Unix) and mobile device forensics. This course will incorporate hands-on-learning by utilizing a computer forensics software package. (Non CS majors) Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 2132 - Circuits and Electronics**

This course is designed to serve as the basic course in CSE curriculum for second year bachelor students. It introduces the fundamentals of the analog and digit circuit abstraction and applications. Topics include: resistive elements, networks, sources, switches, MOS transistors, digital abstraction, amplifiers, energy storage elements. A web-based laboratory will allow students to have hands-on experiments. Prereq: MATH 2411, PHYS 2331, and CSCI 1510. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 2312 - Object Oriented Programming**

Programming topics in the C++ language. The emphasis is on problem solving using object oriented and Generic Programming. Topics include advanced I/O, classes, inheritance, polymorphism and virtual functions, abstract base classes, exception handling, templates, and the Standard Template Library. Prereq: Grade of C- or higher in the following courses: CSCI 1410 and CSCI 1411. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 2421 - Data Structures and Program Design**

Topics include a first look at an algorithm, data structures, abstract data types, and basic techniques such as sorting, searching, and recursion. Programming exercises are assigned through the semester. Prereq: Grade of C- or higher in the following courses: CSCI 1410 and CSCI 1411. Coreq: CSCI 2312. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 2511 - Discrete Structures**

Covers the fundamentals of discrete mathematics, including: logic, sets, functions, asymptotics, mathematical reasoning, induction, combinatorics, discrete probability, relations and graphs. Emphasis on how discrete mathematics applies to computer science in general and algorithm analysis in particular. Prereq: MATH 1401 with a C- or higher (Calculus I). Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 2525 - Assembly Language and Computer Organization**

Topics include computer architecture, program execution at the hardware level, programming in assembly language, the assembly process, hardware support of some high-level language features, and a program's interface to the operating system. Programming exercises are assigned in this course. These exercises involve the use of specific hardware in designated laboratories. Prereq: Grade of C- or higher in the following courses: CSCI 1410, CSCI 1411 and CSCI 1510. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 2571 - Fundamentals of UNIX**

Introduces the UNIX operating system and its family of related utility programs. History and overview, versions, and common features. File operations, utilities, shells, editors, filters and data manipulation. Shell programming communications and networking, windowing environments, mail and Internet. Programming tools. Simple system administration. Credit will not count toward BSCSE degree. Prereq: Familiarity with operating systems and/or a programming course. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 2800 - Special Topics**

Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 2930 - Practical System Administration**

Introduces students to essential system administration topics including, but not limited to, IT design and configuration methodologies, desktop support, building and configuring production level servers, network technologies and troubleshooting, security, virtualization, storage, and server operating systems. Prereq: CSCI 1410 or an equivalent introductory computer programming course. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 2940 - NAND to Tetris: Foundations of Computer Systems**

Introduces the principles of computer systems that underlie the global information age. Starting from first principles, students gradually construct a simple hardware platform and a modern software hierarchy, yielding a working basic yet powerful computer system. Only introductory programming experience is required. Prereq: Grade of C- or higher in the following courses: CSCI 1410 and CSCI 1411. Cross-listed with IWKS 3300. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

## **CSCI 2941 - Game Design and Development I**

Introduces principles of computer game development, building on the rich interplay of computer science, graphics design, physics, music, and narrative. Students develop interactive 2D and 3D games and a final project. Substantial software development involved, but requires only introductory programming experience. Prereq: Grade of C- or higher in the following courses: CSCI 1410 and CSCI 1411. Cross-listed with IWKS 3400. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

## **CSCI 2942 - IoT: The Internet of Things**

In a world where everything is connected to everything else, how does that work? This course introduces techniques for (1) designing systems that can sense the environment and respond to humans in meaningful ways and (2) creating networks of physical objects that collect and exchange data. Such systems might include wearable sensors, interactive art, and Internet-connected home devices. Working individually and in teams, students will develop projects using Inworks' materials, devices, and fabrication tools. The course involves considerable prototyping and software development but requires only introductory programming and prototyping experience. Prereq: Grade of C- or higher in the following courses: CSCI 1410 and CSCI 1411. Cross-listed with IWKS 4120. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 3287 - Database System Concepts**

Introduces database design, database management systems, and the SQL standard database language. Includes data modeling techniques, conceptual database design, theory of object-relational and relational databases, relational algebra, relational calculus, normalization and database integrity. Prereq: Grade of C- or higher in the following courses: ENGL 1020, CSCI 2312 and CSCI 2421. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 3320 - Advanced Programming**

The course will cover a wide range of advanced programming topics via focusing on development of cross-platform applications. The focus will be on problem solving and developing applications with modern languages (such as C++, Java, Objective-C) & frameworks,

including Xcode, Angularjs (with Javascript, HTML5, CSS), Phonegap, & Webstorm. Prereq: CSCI 2421. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 3412 - Algorithms**

Design and analysis of algorithms. Asymptotic analysis as a means of evaluating algorithm efficiency. The application of induction and other mathematical techniques for proving the correctness of an algorithm. Data structures for simplifying algorithm design, such as hash tables, heaps and search trees. Elementary graph algorithms. Assignments include written work and programming projects. Prereq: Grade of C- or higher in the following courses: CSCI 2312, 2421 and 2511. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 3415 - Principles of Programming Languages**

Introduces programming language design concepts and implementation issues. Includes language concepts such as control structures and data types, formal language specification techniques, and syntactic and semantic implementation issues. Prereq: Grade of C- or higher in the following courses: CSCI 2312, 2421 and CSCI 2525. Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 3453 - Operating System Concepts**

Covers the principles of computer operating systems and the essential components of an operating system. Topics include: I/O devices, file systems, CPU scheduling and memory management. Prereq: Grade of C- or higher in the following courses: CSCI 3412 and CSCI 2525. Restricted to Computer Science Majors, Minors and CSSC Certificate. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 3508 - Introduction to Software Engineering**

Introduces principles and practices of software engineering: software life-cycle models, requirements engineering, analysis and design tools, human factors risk management, program certification, project management and intellectual property rights. Prereq: Grade of C- or higher in CSCI 3412. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 3511 - Hardware-Software Interface**

Hardware and software techniques needed to control and program device interfaces. Input and output devices, computer peripherals, device drivers and interfaces are introduced. Specific programmable devices are used in class projects. Prereq: Grade of C- or higher in CSCI 2525. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 3560 - Probability and Computing**

Events and probability. Discrete random variables. Moments of random variables. Conditional probability and expectation. The probabilistic method. Markov chains and random walks. Continuous distributions and the Poisson process. Entropy, randomness and information. Randomized algorithms. Prereq: Grade of a C- or higher in CSCI 2511 and MATH 2411. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 3761 - Introduction to Computer Networks**

Introduction and overview of computer networks. Topics include Internet protocols, network devices, network security, and performance issues. Prereq: Grade of C- or higher in CSCI 2312 and 2421. Restriction: Restricted to Computer Science Majors, Minors and CSSC Certificate. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 3800 - Special Topics**

Credit and subject matter to be arranged. Restriction: Restricted to Computer Science Majors and Minors. Repeatable. Max hours: 9 Credits. **Semester Hours:** 3 to 3

## **CSCI 3840 - Independent Study: CSCI**

Restriction: Restricted to undergraduate Computer Science Majors and Minors. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

## **CSCI 3916 - Web API**

JavaScript Web technologies for front-end development and back-end development. Building a full end to end solution with a mobile or web front-end, Web API and NoSQL database. Prereq: Grade of C- or higher in CSCI 2312 and CSCI 2421. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 3920 - Advanced Programming with Java and Python**

This course introduces the fundamental concepts to develop programs and projects using modern software engineering techniques using two different programming languages (Java and Python). It will cover and apply pattern design approaches, reusable components driven by everyday needs within many software developments, the relationships between object oriented programming concepts and software design concepts. It will dig deeper into techniques to program single threaded applications as well as advanced techniques to construct concurrent and distributed applications. Prereq: Grade of C- or higher in the following courses: CSCI 2312 and CSCI 2421. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 3963 - Network Structures**

This interdisciplinary course examines how the technological, social and economic worlds are connected and how the study of networks sheds light on these connections. Topics include: how opinions spread through society; the robustness and fragility of financial networks; the technology and economics of Web information and on-line communities. Prereq: Grade of C- or higher in MATH 2411. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4034 - Theoretical Foundations of Computer Science**

Introduces abstract models for computation, formal languages and machines. Topics include: automata theory, formal languages, grammars and Turing machines. Prereq: Grade of C- or higher in CSCI 3412. Restriction: Restricted to Computer Science Majors, Minors and CSSC Certificate. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4110 - Applied Number Theory**

Every year, Topics include divisibility, prime numbers, congruences, number theoretic functions, quadratic reciprocity, special diophantine equations, cryptography, computer security, and engineering applications. Cross-listed with CSCI 5110. Prereq: Grade of C- or higher in one of the following courses: MATH 3000 or CSCI 2511. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4172 - Complexity and Problem Solving**

Theoretical and practical aspects of solving complex problems, in particular, but not limited to, NP-complete and PSPACE-complete problems. Various heuristic and approximation algorithms, including greedy, ant, and Genetic Algorithms will be studied. This course is by instructor's permission only. Prereq: Grade of C- or higher in CSCI 4034. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4173 - Computational Complexity and Problem Solving**

Solid, in-depth theoretical foundation in computing, computational complexity, and algorithmics. Additional topics include various algorithms for both discrete and non-discrete problem domains. Models of Computation, Computational Complexity, Time Complexity Classes, Space Complexity Classes, The Theory of NP-completeness. Prereq: Grade of C- or higher in CSCI 4034. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4202 - Introduction to Artificial Intelligence**



Topics include heuristic search, games playing algorithms, application of predicate calculus to AI, introduction to planning, application of formal grammars to AI. Prereq: Grade of C- or higher in CSCI 3412. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4211 - Mobile Computing and Programming**

This course contains two main simultaneous tracks, namely mobile computing and mobile programming. A series of lectures on various aspects of mobile computing provides an understanding of challenges and solutions in design and implementing mobile systems. The main topics include mobile sensing, human mobility and its technical implication. Prereq: Grade of C- or higher in CSCI 3453. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4287 - Embedded Systems Programming**

Embedded Systems Programming happens across a spectrum of Domains. Embedded Systems Programming in the Small is characterized by the creation of small applications in high volumes. Embedded Systems Programming in the Large is characterized by the creation of medium to large applications in one-off or low volumes using specialized Operating Systems such as Real-time Operating Systems. Students will current languages, and are expected to have basic Operating Systems understanding. Prereq: Graded with C- or higher in CSCI 3453. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4408 - Applied Graph Theory**

Introduces discrete structures applications of graph theory to computer science, engineering and operations research. Topics include connectivity, coloring, trees, Euler and Hamiltonian paths and circuits. Matching and covering problems, shortest route and network flows. Prereq: Grade of C- or higher in one of the following courses: MATH 3000 or CSCI 2511. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4411 - Computational Geometry**

Many practical and aesthetic algorithmic problems have their roots in geometry. Applications abound in the areas of computer graphics, robotics, computer-aided design, and geographic information systems, for example. A selection of topics from convex hull, art gallery problems, ray tracing, point location, motion planning, segment intersection, Voronoi diagrams, visibility and algorithmic folding will be covered. Cross-listed with CSCI 5411. Prereq: Grade of C- or higher in CSCI 3412. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 4455 - Data Mining**

Introduces concepts, techniques and methodologies to discover patterns in data. Topics include (but are not limited to) data preprocessing and cleansing, data warehousing, pattern mining, classification, prediction, cluster analysis, outlier detection, and online data analytics. Prereq: Grade of C- or higher in the following courses: MATH 3195 (or both MATH 3191 and MATH 3200), CSCI 3287 and CSCI 3412. Restricted to Computer Science Majors and Minors. Cross-listed with CSCI 5455. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 4501 - Java**

Comprehensive course on Java programming. Coverage of programming language constructs of Java and the core libraries that come with Java: coverage of advanced topics, including technologies for building distributed applications, and interacting with a database. Prereq: Grade of C- or higher in CSCI 2312 and CSCI 2421. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 4551 - Parallel & Distributed Systems**

Examines a range of topics involving parallel and distributed systems to improve computational performance. Topics include parallel and distributed programming languages, architectures, networks, algorithms and applications. Prereq: Grade of C- or higher in Math 3195 (or both MATH 3191 and MATH 3200), CSCI 3415 & CSCI 3453. Restricted to Computer Science Majors and Minors. Cross-listed with CSCI 5551. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 4555 - Compiler Design**

Introduces the basic techniques used in translating programming languages: scanning, parsing, symbol table management, code generation, code optimization and error recovery. Prereq: Grade of C- or higher in CSCI 3412 and CSCI 3415. Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 4565 - Introduction to Computer Graphics**

Introduces two and three dimensional computer graphics. Topics include scan conversion, geometric primitives, transformation, viewing, basic rendering, and illumination. Emphasis is on programming using "C" and "C++" Open GL. Pre-req: Grade of C- or higher in CSCI 3412 and (MATH 3191 or MATH 3195). Restricted to Computer Science Majors and Minors. Cross-listed with CSCI 5565. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 4580 - Data Science**

Introduces concepts and techniques that enable data cycle from data extraction to knowledge discovery, including but not limited to data exploration, hypotheses testing, data organization,

data featurization, supervised and unsupervised data modeling and learning, scaling-up analytics, and data visualization. Prereq: Grade of C- or higher in MATH 3195 (or both MATH 3191 and MATH 3200), CSCI 3287 and CSCI 3412. Restricted to Computer Science Majors & Minors. Cross-listed with CSCI 5580. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4591 - Computer Architecture**

Deals with how assembly language maps to hardware, and basic hardware techniques implemented in computers. Topics include logic design of arithmetic units, data control path processor logic, pipelining, memory systems, and input-output units. The emphasis is on logic structure rather than electronic circuitry. Students must know basic control logic design and be familiar with an assembly language before taking this course. Prereq: Grade of C- or higher in CSCI 2525. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4630 - Linguistic Geometry**

Linguistic Geometry (LG) is a type of Game Theory in Artificial Intelligence, which permits to overcome combinatorial explosion and generate optimal strategies in real time. LG is currently changing the paradigm of military command and control in the USA and abroad. Prereq: Grade of C- or higher in CSCI 3412. Restriction: Restricted to Computer Science Majors and Minors. Cross-listed with CSCI 5619. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4640 - Universal Compiler: Theory and Construction**

Theoretical foundations and step-by-step hands-on experience in the development of a compiler, which can tune itself to a new programming language. This is a must-take course for future software developers as well as those interested in applications of the theory of Computer Science. Cross-listed with CSCI 5640. Prereq: Grade of C- or higher in CSCI 3453. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4650 - Numerical Analysis I**

Methods and analysis of techniques used to resolve continuous mathematical problems on the computer. Solution of linear and nonlinear equations, interpolation and integration. Cross-listed with CSCI 5660, MATH 4650, and MATH 5660. Prereq: MATH 2411, MATH 3191 or MATH 3195, and programming experience. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4660 - Numerical Analysis II**

Numerical differentiation and integration, numerical solution of ordinary differential equations, and numerical solutions of partial differential equations as time allows. Prereq: Grade of C- or

higher in MATH 3195 (or both MATH 3191 and MATH 3200), MATH or CSCI 4650 or 5660 and programming experience. Restricted to Computer Science Majors and Minors. Cross-listed with CSCI 5661, MATH 4660 and 5661. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4738 - Senior Design I**

This is an advanced practical course in which students design, implement, and document and test software systems for use in industry, non-profits, government and research institutions. The course offers practical experience by working closely with project sponsors. It also offers extensive experience in oral and written communication throughout the software life cycle. Prereq: Grade of C- or higher in CSCI 3287, CSCI 3415, CSCI 3453, and CSCI 3508. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4739 - Senior Design II**

This course is a continuation of Senior Design I. Students must have taken Senior Design I in order to enroll for Senior Design II. In this course, the projects begun in Senior Design I are completed and presented. Prereq: CSCI 4738. Restricted to undergraduate Computer Science Majors and Minors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4740 - Computer Security**

Introduces basic knowledge from the computer security area. Concepts and techniques of cryptography, including history of codes and ciphers, basic cryptography techniques like data encryption standards, public key systems and digital signatures. Prereq: Grade of C- or higher in MATH 1120. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4741 - Principles of Cybersecurity**

Focuses on the most common threats to cybersecurity as well as ways to prevent security breaches or information loss. Topics will include: understanding and thwarting hacker methods, authentication, cryptography, programming security, malware analysis, web, database and file server security, network and enterprise security methods. Prereq: Grade of C- or higher in CSCI 3412 and CSCI 3287. Restriction: Restricted to Computer Science Majors, Minors and CSSC Certificate. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4742 - Cybersecurity Programming and Analysis**

Focuses on cybersecurity related programming and analysis skills. Topics include: network and security application development, intrusion detection, automating security hardening. Students will design and develop security applications in multiple programming languages. Undergraduate algorithms and programming knowledge expected. Pre-Req: CSCI 3415.

Restricted to undergraduate Computer Science Majors and Minors. Cross-listed with CSCI 5742. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4743 - Cyber and Infrastructure Defense**

Presents analytical study of state-of-the-art attack and defense paradigms in cyber systems and infrastructures. Analysis will focus on: theoretical foundations of cybersecurity, practical development of novel technical defense techniques and analysis of alternatives. Knowledge of undergraduate-level networking. Cross-listed with CSCI 5743. Prereq: Grade of C- or higher in CSCI 3761. Restriction: Restricted to Computer Science Majors, Minors and CSSC Certificate. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4771 - Introduction to Mobile Computing**

Provides an in-depth understanding of the fundamentals in mobile computing and studies the existing and proposed solutions for ubiquitous computing. This course focuses on systems and networking issues involved with supporting mobility. Prereq: Grade of C- or higher in CSCI 3453 and CSCI 3761. Restricted to Computer Science Majors and Minors. Cross-listed with CSCI 5771. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4788 - Bioinformatics**

Provides a broad exposure to the basic concepts and methodologies of bioinformatics and their application to analyzing genomic and proteomic data. Topics may include dynamic programming algorithms, graph theoretic techniques, hidden Markov models, phylogenetic trees, RNA/protein structure prediction and microarray analysis. Cross-listed with MATH 4788, PHYS 4788. Prereq: Grade of C- or higher in CSCI 1410, CSCI 1411 and MATH 3195 or 3191. Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4800 - Special Topics**

Credit and subject matter to be arranged. Restriction: Restricted to Computer Science Majors and Minors. Repeatable. Max hours: 9 Credits. **Semester Hours:** 3 to 3

### **CSCI 4840 - Independent Study**

Restricted to undergraduate Computer Science Majors and Minors with senior standing. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **CSCI 4910 - User Experience Design**

A how-to course for any technologist who has endured difficult interfaces and wants to design effective user interfaces that respect and advance the user experience. Course includes:

Psychology, HCI personas, scenarios, prototyping, and evaluation for desktop and mobile applications. Prereq: Grade of C- or higher in CSCI 2312 and CSCI 2421. Restricted: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4920 - Computer Game Design and Programming**

Computer Game Design and Programming introduces practical and example driven approaches to modern 3D game development. Topics include 3D modeling, character animation, UI design, scripting, texture mapping, and sound effect. Prereq: Grade of C- or higher in CSCI 3412.

Restriction: Restricted to Computer Science Majors and Minors. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

### **CSCI 4930 - Machine Learning**

Provides theoretical and computational foundations in machine learning to design and develop intelligent applications to perform object recognition, personalized recommendations, improve cybersecurity, fact-checking, forecasting and finding communities based on three classes of algorithms: supervised, unsupervised, semi-supervised and reinforcement learning. Prereq: Grade of C- or higher in the following courses: MATH 3195 (or both MATH 3191 and MATH 3200) & CSCI 3412. Restricted to Computer Science Majors and Minors. Cross-listed with CSCI 5930. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4930 - Machine Learning**

Provides theoretical and computational foundations in machine learning to design and develop intelligent applications to perform object recognition, personalized recommendations, improve cybersecurity, fact-checking, forecasting and finding communities based on three classes of algorithms: supervised, unsupervised, semi-supervised and reinforcement learning. Prereq: Grade of C- or higher in the following courses: MATH 3195 (or both MATH 3191 and MATH 3200) & CSCI 3412. Restricted to Computer Science Majors and Minors. Cross-listed with CSCI 5930. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4931 - Deep Learning**

Provides a foundation on deep learning; a sought-after skill in machine learning. Topics include neural network design & learning, restricted Boltzmann machine, convolution neural network, recurrent neural network, LSTMs, deep reinforcement learning, autoencoders, and evolving computation frameworks like TensorFlow, Keras. Prereq: Grade of C- or higher in MATH 3195 (or both MATH 3191 and MATH 3200) and CSCI 3412. Restricted to Computer Science Majors and Minors. Cross-listed with CSCI 5931. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 4939 - Internship**

Faculty or employer-supervised employment in industry. Enrollment is limited to students who fully completed a contract for cooperative education credit by the last day of the drop or add period. Prereq: Grade of C- or higher in CSCI 3415. Restriction: Restricted to Computer Science Majors and Minors. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **CSCI 4951 - Big Data Systems**

Presents a practical while in-depth review of the principles of a series of modern data processing systems (e.g., Hadoop, Spark, TensorFlow) designed to address the Big Data challenges. In combination, these systems enable the data to knowledge (Big) data lifecycle. Prereq: Grade of C- or higher in MATH 3195 (or MATH 3191 and MATH 3200), CSCI 3287 and CSCI 3412. Restriction: Restricted to Computer Science Majors and Minors. Cross-listed with CSCI 5951. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5010 - Software Architecture**

This course will focus on two major areas. The first part of the course will cover Software Requirements Analysis and Development as well as Software Architecture and the Soft Skills needed by high level Software Architects. The second part of the course will cover how Persistent Data fits into different types of Software Systems. The primary focus of the second part of the course will be on incorporating larger scale Enterprise Data Systems into Software Systems and will be an application of the first part of the course material. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5011 - Software Project Management Support**

Large Software Systems must be Planned, Scheduled, and Staffed. To accomplish these tasks Software Engineers must understand the Software Architecture, the Software System Dependencies, Effort Estimation and the various Project Development Models that might be used. This course will look at different Project Models, Project Management Needs, and various Effort Estimation tools and techniques. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5098 - Computer Science for Bioscientists**

Provides a broad but detailed overview of the computer science field to graduate students in the biosciences, with emphasis on web technologies, programming languages, algorithms and database systems. No credit for CS graduate students. Prereq: Working knowledge of programming language (e.g., Java). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5110 - Applied Number Theory**

Every year, Topics include divisibility, prime numbers, congruences, number theoretic functions, quadratic reciprocity, special diophantine equations, cryptography, computer

security, and engineering applications. Cross-listed with CSCI 4110. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5172 - Complexity and Problem Solving**

Theoretical and practical aspects of solving complex problems, in particular, but not limited to, NP-complete and PSPACE-complete problems. Various heuristic and approximation algorithms, including greedy, ant, and Genetic Algorithms will be studied. This course is by instructor's permission only. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5211 - Mobile Computing and Programming**

This course contains two main simultaneous tracks, namely mobile computing and mobile programming. A series of lectures on various aspects of mobile computing provides an understanding of challenges and solutions in design and implementing mobile systems. The main topics include mobile sensing, human mobility and its technical implication. Students are expected to have undergraduate knowledge of operating systems and computer networks. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5217 - Information Theory**

Introduces information theory and its application in computer science, communication theory, coding and applied mathematics. Entropy, mutual information, data compression and storage, channel capacity, rate distortion, hypothesis testing. Error detecting and correcting codes, block codes and sequential codes. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5255 - Object Oriented Design**

Software system design using object-oriented techniques, responsibility driven design and agile development practices. Topics include objects, classes, interfaces, inheritance, polymorphism, exception handling and testing. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5407 - Security & Cryptography**

A broad overview of cryptography and its relation to computer security. Topics include basic standard cryptographic techniques, a history of codes and ciphers, RSA, DES, AES, Elliptic Curve Cryptography, ElGammal, and applications to current and future technologies. Restriction: Restricted to Graduate Standing. Cross-listed with CSCI 7407. Max hours: 3 Credits. **Semester Hours:** 3 to 3



## **CSCI 5408 - Applied Graph Theory**

Introduces discrete structures applications of graph theory to computer science, engineering and operations research. Topics include connectivity, coloring, trees, Euler and Hamiltonian paths and circuits. Matching and covering problems, shortest route and network flows. Restriction: Restricted to students with graduate standing. Note: Expected knowledge of abstract mathematics including discrete structures. Cross-listed with MATH 4408. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 5409 - Graph Theory and Graph Algorithms**

Studies geometric graphs and other geometric objects, both analysis and algorithmic construction, leads to interesting connections among VLSI design, graph theory and graph algorithms. Studies a subset of the recent literature, with special emphasis on visibility graphs, thickness of graphs, graph coloring and the surprising and elegant connections among them all. Other topics are introduced as time permits. Prereq: CSCI 5408. Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 5411 - Computational Geometry**

Many practical and aesthetic algorithmic problems have their roots in geometry. Applications abound in the areas of computer graphics, robotics, computer-aided design, and geographic information systems, for example. A selection of topics from convex hull, art gallery problems, ray tracing, point location, motion planning, segment intersection, Voronoi diagrams, visibility and algorithmic folding will be covered. Cross-listed with CSCI 4411. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 5446 - Theory of Automata**

Studies the relationships between classes of formal languages (regular, context-free, context-sensitive, phrase-structure) and classes of automata (finite-state, pushdown, Turing machines). Additional topics include decidability and computability issues. Restriction: Restricted to students with graduate standing. Note: Expected knowledge of algorithms equivalent to CSCI 3412. Cross-listed with MATH 5446. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 5451 - Algorithms**

Advanced design and analysis techniques: dynamic programming, greedy algorithms, amortized analysis. Advanced data structures: Fibonacci heaps, union-find data structures. Study of variety of special topics, which may include: graph algorithms, optimization problems, Fast Fourier Transform, string matching, geometric algorithms, NP-completeness and approximation algorithms. Restriction: Restricted to students with graduate standing. Note: Expected knowledge of algorithms equivalent to CSCI 3412. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 5455 - Data Mining**

Introduces concepts, techniques and methodologies to discover patterns in data. Topics include (but are not limited to) data preprocessing and cleansing, data warehousing, pattern mining, classification, prediction, cluster analysis, outlier detection, and online data analytics.

Restriction: Graduate Standing. Cross-listed with CSCI 4455. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 5542 - Neural Networks**

Parallel distributed representations, dynamics of Hopfield-style networks, content addressable memories, and Hebbian learning are the major topics of the first half. The last half consists of simulated annealing back propagation, competitive learning, and self-organizing networks.

Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 5551 - Parallel and Distributed Systems**

Examines a range of topics involving parallel and distributed systems to improve computational performance. Topics include parallel and distributed programming languages, architectures, networks, algorithms and applications. Prereq: Graduate standing. Cross-listed with CSCI 4551 and 7551. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 5552 - Advanced Topics in Parallel Processing**

Examines the advances of sequential computers for gaining speed and application of these techniques to high-speed supercomputers of today. Programming methodologies of distributed and shared memory multiprocessors, vector processors and systolic arrays are compared. Performance analysis methods for architectures and programs are described. Cross-listed with CSCI 7552. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

## **CSCI 5559 - Database Systems**

Introduces database system concepts, with examination of relational database systems from conceptual design through relational schema design and physical implementation. Topics include database design and implementation for large database systems, transaction management, concurrency control, object-oriented and distributed database management systems. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

## **CSCI 5565 - Introduction to Computer Graphics**

Introduces two and three dimensional computer graphics. Topics include scan conversion, geometric primitives, transformation, viewing, basic rendering, and illumination. Emphasis is on the programming using C and C++ Open GL. Cross-listed with CSCI 4565. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5573 - Operating Systems**

Students study the principles of computer operating systems and their essential components. Team projects expose students to a variety of system design issues as they relate to the functionality and performance of the system. Topics include I/O devices, Disk Scheduling, File System Organizations, Directory Systems, Sequential and Concurrent process, CPU Scheduling, Memory Management, Deadlock, Process and Threading, and review of some related articles in the literature. Prereq: Expected knowledge of operating systems equivalent to CSCI 3453. Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5574 - Advanced Topics in Operating Systems**

Covers the advanced topics in operating systems by examining functionality and performance issues in CPU Scheduling, communications, distributed file systems, distributed operating systems, shared-memory multiprocessors and real-time operating systems. In addition to studying papers, reviews and presentations, students carry out a semester long team project within the scope of one of the above topics. Cross-listed with CSCI 7574. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5575 - Cyber-Physical Systems**

Cyber-physical systems (CPS) bridge the cyber-world of computing, communication and control with the physical world. This course offers an interdisciplinary perspective of CPS within computer science and its applications to understand the issues in the full lifecycle of CPS. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5580 - Data Science**

Introduces concepts and techniques that enable data cycle from data extraction to knowledge discovery, including but not limited to data exploration, hypotheses testing, data organization, data featurization, supervised and unsupervised data modeling and learning, scaling-up analytics, and data visualization. Restriction: Graduate Standing. Cross-listed with CSCI 4580. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5582 - Artificial Intelligence**

Approaches to design of systems for solving problems usually solved by humans, especially those related to intelligent decision making. Emphasis on various types of knowledge

representation. Restriction: Restricted to students with graduate standing. Cross-listed with CSCI 7582. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5585 - Advanced Computer Graphics**

An in-depth study of active research topics in computer graphics. Topics include advanced rendering, global illumination, scientific visualization, geometric modeling, simulation and animation. Emphasis is on readings from literature and on a term project. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5593 - Advanced Computer Architecture**

Important concepts in the structural design of computer systems are covered. Topics include memory hierarchy, super pipelining and super scalar techniques, dynamic execution, vector computers and multiprocessors. Expected knowledge of Computer Architecture equivalent to CSCI 4591. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5595 - Computer Animation**

This course introduces the state of the art techniques for modern computer animation focused on a practical, example driven approach to learning the unique art of 3D animation. Topics include modeling, kinematics, rigging, textures, physically based dynamics, and rendering. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5610 - Computational Biology**

Designed to introduce a broad range of computational problems in molecular biology. Solution techniques draw from several branches of mathematics: combinatorics, probability, optimization, and dynamical systems. No prior knowledge of biology is critical, but it would be at least helpful to have the equivalent of BIOL 5099. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5619 - Complex Intelligent Systems**

Presents the cutting-edge results of research in AI: advanced topics in linguistic geometry. LG is an approach to construction of mathematical models for reasoning about large-scale multi-agent concurrent games. The purpose of LG is to provide strategies to guide the participants of a game to reach their goals. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5630 - Linguistic Geometry**

Linguistic Geometry (LG) is a type of Game Theory in Artificial Intelligence, which permits to overcome combinatorial explosion and generate optimal strategies in real time. LG is currently changing the paradigm of military command and control in the USA and abroad. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5640 - Universal Compiler: Theory and Construction**

Theoretical foundations and step-by-step hands-on experience in the development of a compiler, which can tune itself to a new programming language. This is a must-take course for future software developers as well as those interested in applications of the theory of Computer Science. Cross-listed with CSCI 4640. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5654 - Algorithms for Communication Networks**

Algorithmic and mathematical underpinnings of communication networks. A taxonomy of data-packet networks depending on modes of communication: fixed-interconnection networks, radio networks and multiple-access channel. Algorithms to implement packet routing and broadcasting. Cross-listed with CSCI 7654. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5660 - Numerical Analysis I**

Methods and analysis of techniques used to resolve continuous mathematical problems on the computer. Solution of linear and nonlinear equations, interpolation and integration. Prereq: MATH 2411, MATH 3191 or MATH 3195, and programming experience. Cross-listed with CSCI 4650, MATH 4650, and MATH 5660. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5661 - Numerical Analysis II**

Numerical differentiation and integration, numerical solution of ordinary differential equations, and numerical solutions of partial differential equations as time allows. Cross-listed with CSCI 4660, MATH 4660 and 5661. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5667 - Introduction to Approximation Theory**

Normed linear spaces, convexity, existence and uniqueness of best approximations. Tchebychev approximation by polynomials and other related families. Least squares approximation and splines. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5682 - Expert Systems**

Reviews and analyzes many expert systems documented in the literature, such as Mycin, Macsyma, and Xcon. Emphasis is given to the design of rule-based systems, the use of uncertain and incomplete information and system shells. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5690 - Knowledge Representation for Intelligent Systems**

An in-depth study of different types of knowledge representation in artificial intelligence for the efficient control of complex real-world systems like autonomous robots, space vehicles, and military units. Major emphasis is on search algorithms and heuristics, logical representation with applications to planning, formal linguistic representation. At the conclusion, all the theories studied are combined in the form of introduction to the state-of-the-art linguistic geometrical representation of complex control systems. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5701 - High-Performance Communication Systems and Network Analysis**

Protocols and architectures related to high performance communication systems as well as network performance analysis techniques are covered. Topics include Integrated Services Digital Networks (ISDN), Broadband ISDN, protocols such as ATM and SONET, and high performance network architectures such as optical networks. Analytical analysis of network performance includes queuing theory and stochastic processes. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5702 - Big Data Mining**

Introduces techniques to discover patterns in Big Data. Selected topics: time-series analysis at scale, big graph mining, big scientific data mining, and spatiotemporal data mining, with applications in precision medicine, social network analysis, transportation, scientific data analysis, and geospatial analytics. Cross-listed with CSCI 7702. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5704 - Introduction to Distributed Systems**

Studies design, implementation and management of distributed systems, including communication issues, security reliability, resource sharing, and remote execution. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5728 - Software Engineering**

Groups of students plan, analyze and design large software projects. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5741 - Principles of Cybersecurity**

Focuses on the most common threats to cybersecurity as well as ways to prevent security breaches or information loss. Topics will include: understanding and thwarting hacker methods, authentication, cryptography, programming security, malware analysis, web, database and file server security, network and enterprise security methods. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5742 - Cybersecurity Programming and Analysis**

Focuses on cybersecurity related programming and analysis skills. Topics include: network and security application development, intrusion detection, automating security hardening. Students will design and develop security applications in multiple programming languages. Undergraduate algorithms and programming knowledge expected. Cross-listed with CSCI 4742. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5743 - Cyber and Infrastructure Defense**

Presents analytical study of state-of-the-art attack and defense paradigms in cyber systems and infrastructures. Analysis will focus on: theoretical foundations of cybersecurity, practical development of novel technical defense techniques and analysis of alternatives. Knowledge of undergraduate-level networking. Restriction: Restricted to students with graduate standing. Cross-listed with CSCI 4743. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5765 - Computer Networks**

An in-depth study of active research topics in computer networks. Topics include: Internet protocols, TCP/UDP, congestion and flow control, IP routings, mobile IP, P2P overlay networks, network security, performance, and other current research topics. Prereq: Graduate standing. Cross-listed with CSCI 7765. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5771 - Introduction to Mobile Computing**

Provides the fundamentals of mobile computing. Studies existing and proposed solutions for ubiquitous computing. This course focuses on systems and networking issues involved with supporting mobility. Cross-listed with CSCI 4771. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5772 - Mobile and IoT Security**

This course concentrates on the computing of emerging mobile and IoT systems security in the Computer Science domain. The seminar will discuss recent research on computing for mobile user authentication, vulnerability risk detection of mobile/IoT systems, and software based defense mechanism. Restriction: Restricted to graduate school standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 5780 - Theory of Distributed Computing**

Elements of the theory of distributed computing through fundamental algorithmic ideas, lower bound techniques, and impossibility results. Timing assumptions (asynchrony and synchrony), simulations between models (message passing and shared memory), failure types (crash and Byzantine). Restriction: Restricted to students with graduate standing. Note: Expected knowledge of algorithms equivalent to CSCI 3412. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 5799 - Cloud Computing**

This course studies fundamental designs and key technologies in Cloud Computing by reading technical articles, and conducting a semester group project. Topics include cloud computing design and architectures, service models, virtualization, advanced computer networks, programming, often software, and security. Note: Operating System, Computer Networks, and programming experience are recommended for success in this course. Prereq: Graduate standing. Cross-listed with CSCI 7799. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 5800 - Special Topics**

These special topics courses cover recent developments in an aspect of computer science. Restriction: Restricted to students with graduate standing. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

## **CSCI 5840 - Independent Study**

For graduate computer science students. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 3

## **CSCI 5866 - Advanced Mobile and Ubiquitous Systems**

This course covers various aspects of mobile and ubiquitous systems to provide an in-depth understanding of principles, state-of-the-art solutions and challenges in design and implementation of such systems. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 5920 - Computer Game Design and Programming**

Computer Game Design and Programming introduces practical and example driven approaches to modern 3D game development. Topics include 3D modeling, character animation, UI design, level design, scripting, texture mapping, and sound effect. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 5930 - Machine Learning**



Provides theoretical and computational foundations in machine learning to design and develop intelligent applications to perform object recognition, personalized recommendations, improve cybersecurity, fact-checking, forecasting and finding communities based on three classes of algorithms: supervised, unsupervised, semi-supervised and reinforcement learning. Restriction: Graduate Standing. Cross-listed with CSCI 4930. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5931 - Deep Learning**

Provides a foundation on deep learning; a sought-after skill in machine learning. Topics include neural network design & learning, restricted Boltzmann machine, convolution neural network, recurrent neural network, LSTMs, deep reinforcement learning, autoencoders, and evolving computation frameworks like TensorFlow, Keras. Restriction: Graduate Standing. Cross-listed with CSCI 4931. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5939 - Internship**

Faculty or employer-supervised employment in industry. Enrollment is limited to students who fully complete a contract for cooperative education credit by the last day of the drop or add period. Students who want to enroll this course should submit an official job description that must clearly show the level of work requires a bachelor's degree in the computer science field or equivalent work experience. This course will not be counted towards either MSCS or PhD in CSIS or EAS. Prereq: Complete at least two of category A courses (for MS) or complete Preliminary exam (for PhD) and 3.0 or better GPA. Restricted to students with a minimum of 1 full academic year of study at the graduate level. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **CSCI 5941 - Directed Study: Programming Project**

Software development project supervised by a faculty member approved by the Center for Computational Biology. Used towards a certificate in Computational Biology. Counts as an independent study. Prereq: CSCI 5451 and CSCI 5610. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5951 - Big Data Systems**

Presents a practical while in-depth review of the principles of a series of modern data processing systems (e.g., Hadoop, Spark, TensorFlow) designed to address the Big Data challenges. In combination, these systems enable the data to knowledge (Big) data lifecycle. Restriction: Restricted to Graduate standing. Cross-listed with CSCI 5951. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 5952 - Big Data Science**

Introduces methodologies that enable Big Data lifecycle. Selected topics: topic modeling, causality analysis, structure learning, learning with less supervision, and massive-scale data analytics, with applications in social media analysis, computational biology, climate modeling, health care, and traffic monitoring. Restriction: Graduate standing. Cross-listed with CSCI 7952. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 6010 - Principles of Programming**

This course introduces students to fundamental principles and techniques in the design and implementation of modern programming such as C++, Java. Students learn how to write programs in an object oriented high level programming language. Weekly laboratory assignments will provide hands-on experience in this course. (non-CS majors) Prereq: meet MAPS requirements and familiarity with computer use. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 6020 - Data Structures and Algorithms**

This course introduces students to fundamental skills in computer science such as data structures and computer algorithms. Students will learn how to design efficient algorithms and analyze them. (non-CS majors) Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 6030 - Computer Systems & Application**

This course surveys essential technologies such operating systems, database systems, and the Internet. Students study the basic of operating systems, database systems, and the Internet. Weekly laboratory experiments will provide hands-on experience. (non-CS majors) Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 6040 - Teaching Practice of Computer Science**

This course provides students the opportunity for practicing and developing courses for adolescents using previously acquired knowledge. Students will design and develop a computer science class of their interest and appropriate to their area of expertise which they will offer at their school. (non-CS majors) Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 6595 - Computational Methods in Nonlinear Programming**

Introduces fundamental algorithms and theory for nonlinear optimization problems. Topics include Newton, quasi-Newton and conjugate directional methods; line search and trust-region methods; active set, penalty and barrier methods for constrained optimization; convergence analysis and duality theory. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 6664 - Numerical Linear Algebra**

Offered every other year. Solution of linear equations, eigenvector and eigenvalue calculation, matrix error analysis, orthogonal transformation, iterative methods. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 6950 - Master's Thesis**

Repeatable. Max hours: 12 Credits. **Semester Hours:** 1 to 9

### **CSCI 6960 - Master's Report**

Students seeking a Master of Science in computer science, who do not choose to do a thesis, must complete an individual project of an investigative and creative nature under supervision of a full-time CS graduate faculty. Student must present their results to a faculty committee. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 7002 - Computer Security**

A broad overview of computer security, roughly divided into three unequal components: a) the history of codes and ciphers; b) basic cryptographic techniques, for example, symmetric cryptography, authentication techniques, and asymmetric crypto systems, and: c) applications to current and future computer-related technologies, for example, network security, wireless communication, quantum cryptography, and more. Prereq: CSCI 5451. Cross-listed with ISMG 7002. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 7173 - Computational Complexity and Algorithms**

A solid, in-depth theoretical foundations in computing, computational complexity, and algorithmics. Various algorithms, including both discrete and non-discrete problem domains. NP-complete and other complete classes of problems/languages. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 7200 - Advances in Management Information Systems**

Provides a broad coverage of research on the management of information technology. The course covers the systems-oriented research, organizational-oriented research, and information systems economics research. Prereq: PhD standing. Cross-listed with ISMG 7200. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 7210 - Topics in Analytical Research in Management Information Systems**

Covers a variety of analytical research topics of interest to the IS research community including the evaluation of data mining algorithm performance, cost sensitive learning and outlier detection. Prereq: Admission to the CSIS PhD program. Cross-listed with ISMG 7210. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 7211 - Topics in Behavioral-Organizational Research in Management Information Systems**

Provides in-depth exposure to some key behavioral, management and organizational theories and models used in Information Systems research. Covers topics in socio-technical, trust, computer self-efficacy, organizational transformation, organizational learning, resource-based and coordination theories. Prereq: Admission to the CSIS PhD program. Cross-listed with ISMG 7211. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 7407 - Security & Cryptography**

A broad overview of cryptography and its relation to computer security. Topics include basic standard cryptographic techniques, a history of codes and ciphers, RSA, DES, AES, Elliptic Curve Cryptography, ElGammal, and applications to current and future technologies. Restriction: Restricted to Graduate Standing. Cross-listed with CSCI 5407. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 7502 - Research Methods**

Promotes research skills. Involves presenting a research topic and discussions of its merits, reviewing journal articles, writing a paper and/or a proposal in the NIH/NSF format in the student's area of research. Prereq: PhD student standing or permission of instructor for MS students who are writing a thesis. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 7551 - Parallel and Distributed Systems**

Examines a range of topics involving parallel and distributed systems to improve computational performance. Topics include parallel and distributed programming languages, architectures, networks, algorithms and applications. Prereq: Graduate standing. Cross-listed with CSCI 5551. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 7552 - Advanced Topics in Parallel Processing**

Examines the advances of sequential computers for gaining speed and application of these techniques to high-speed supercomputers of today. Programming methodologies of distributed and shared memory multiprocessors, vector processors and systolic arrays are compared. Performance analysis methods for architectures and programs are described. Cross-listed with CSCI 5552. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CSCI 7574 - Advanced Topics in Operating Systems**

Covers the advanced topics in operating systems by examining functionality and performance issues in CPU Scheduling, communications, distributed file systems, distributed operating systems, shared-memory multiprocessors and real-time operating systems. In addition to

studying papers, reviews and presentations, students carry out a semester long team project within the scope of one of the above topics. Cross-listed with CSCI 5574. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 7582 - Artificial Intelligence**

Approaches to design of systems for solving problems usually solved by humans, especially those related to intelligent decision making. Emphasis on various types of knowledge representation. Cross-listed with CSCI 5582. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 7595 - Computer Animation**

This course introduces the state of the art techniques for modern computer animation focused on a practical, example driven approach to learning the unique art of 3D animation. Topics include modeling, kinematics, rigging, textures, physically based dynamics, and rendering. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 7654 - Algorithms for Communication Networks**

Algorithmic and mathematical underpinnings of communication networks. A taxonomy of data-packet networks depending on modes of communication: fixed-interconnection networks, radio networks and multiple-access channel. Algorithms to implement packet routing and broadcasting. Cross-listed with CSCI 5654. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 7702 - Big Data Mining**

Introduces techniques to discover patterns in Big Data. Selected topics: time-series analysis at scale, big graph mining, big scientific data mining, and spatiotemporal data mining, with applications in precision medicine, social network analysis, transportation, scientific data analysis, and geospatial analytics. Cross-listed with CSCI 5702. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 7711 - Bioinformatics I**

(BIOL 7711-Offered on a semester basis from H.S.C.) What is Bioinformatics and why study it? How is large-scale molecular biology data generated, where and how can researchers gain access to it, what computational analyses are possible and computational techniques for solving inference problems in molecular biology? Prereq: Permission of instructor. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **CSCI 7712 - Bioinformatics II**

(BIOL 7712-offered on a semester basis from H.S.C.) Inference problems and computational techniques for molecular biology, with emphasis on machine learning approaches. Use of computational induction techniques focused on information extraction from biomedical literature, inference of biochemical networks from high-throughput data and prediction of protein function. Estimation, clustering, discrimination and regression. Prereq: CSCI 7711. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **CSCI 7765 - Computer Networks**

An in-depth study of active research topics in computer networks. Topics include: Internet protocols, TCP/UDP, congestion and flow control, IP routings, mobile IP, P2P overlay networks, network security, performance, and other current research topics. Prereq: Graduate standing. Cross-listed with CSCI 5765. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 7799 - Cloud Computing**

This course studies fundamental designs and key technologies in Cloud Computing by reading technical articles, and conducting a semester group project. Topics include cloud computing design and architectures, service models, virtualization, advanced computer networks, programming, often software, and security. Note: Operating System, Computer Networks, and programming experience are recommended for success in this course. Prereq: Graduate standing. Cross-listed with CSCI 5799. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 7800 - Special Topics**

These special topics courses cover recent developments in an aspect of computer science. Prereq: As determined by instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 7840 - Independent Study**

Offers doctoral students opportunity for independent, creative work under supervision of a CSE full-time graduate faculty. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **CSCI 7866 - Advanced Mobile and Ubiquitous Systems**

This course covers various aspects of mobile and ubiquitous systems to provide an in-depth understanding of principles, state-of-the-art solutions and challenges in design and implementation of such systems. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 7952 - Big Data Science**

Introduces methodologies that enable Big Data lifecycle. Selected topics: topic modeling, causality analysis, structure learning, learning with less supervision, and massive-scale data

analytics, with applications in social media analysis, computational biology, climate modeling, health care, and traffic monitoring. Restriction: Graduate standing. Cross-listed with CSCI 5952. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CSCI 8990 - Doctoral Dissertation**

Repeatable. Max hours: 9 Credits. **Semester Hours:** 1 to 9

### **Construction Engr and Mgmt**

#### **CEMT 1000 - Introduction to Construction Management**

Course provides an introduction to the construction industry and project management. Student will learn basic CM terminology, roles and responsibilities associated with a construction project, and construction documents. Max hours: 1 Credits. **Semester Hours:** 1 to 1

#### **CEMT 2100 - Construction Management Fundamentals**

Course provides an overview of the construction industry. Students will learn about construction project management from pre-design through commissioning. Students will explore plan reading, planning, scheduling, quantity take off and estimating methodologies, and project delivery methods. Oral and written construction communication will be incorporated within assignments. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **CEMT 2300 - Heavy Civil Construction and Equipment**

Course includes an introduction to heavy civil construction equipment, materials, labor and methods. Students will learn to perform comparative cost analysis for owning and operating heavy equipment; and perform the proper selection, applications, utilization and productivity of heavy equipment with the associated labor and logistics. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **CEMT 3100 - Field Engineering and Management**

se includes an overview of field engineering and management. Students will assess basic design of temporary structures, quality assurance and quality control, and materials testing and processing. Students will learn the fundamentals of soils engineering. Students will be able to apply surveying concepts and generate site layout. Students will learn the basics of safety, accident prevention, risk management, and regulatory compliance on construction sites. Prereq: CEMT 2100 or CVEN 4230. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **CEMT 4067 - Construction Senior Capstone**

Students will work in teams to formulate or design a construction project requiring the synthesis of material learned in previous courses. The student teams will establish goals, plan and accomplish tasks, meet deadlines, analyze risk and uncertainty, and demonstrate leadership and management skills. Teams will coordinate and communicate with a range of stakeholders and give final presentations. Prereq: CEMT 2100 or CVEN 4230. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CEMT 4231 - Construction Materials and Methods**

This course presents information regarding the primary materials and methods used to design and construct the majority of buildings in the United States including concrete, wood and steel. Students explore processes related to the specification, ordering and installation of various construction materials, as well as analyze various materials' performance characteristics. Two important themes are incorporated throughout discussions: sustainability and ethics. In addition to lectures and class activities, students will be asked to research, define, and present information regarding a wide range of material properties and construction processes. Prereq: CEMT 2100 or CVEN 4230. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CEMT 4232 - Construction Planning and Control**

This course presents knowledge on planning and controlling of construction projects. Students will learn the basics of construction planning to develop work breakdown structure and activity list, estimate activity cost and duration, and identify job logic and precedence relationships. Several scheduling techniques will be presented in this class, including bar chart, network scheduling, uncertainty in scheduling (PERT), limited resources scheduling, resource leveling, line of balance, and time-cost tradeoff analysis. Furthermore, this class will provide knowledge on construction control techniques, including cash flow analysis, integrated time-cost control, and value engineering. Students will acquire skills on the use of currently available computer scheduling and planning software such as Primavera 6 and Navisworks Manage to create 4D models and visualize the sequence of the construction activities. In addition, students will form teams and work on a project throughout the semester to apply the skills that they learn in class. Cross-listed with CVEN 5232. Prereq: CEMT 2100 or CVEN 4230 and a statistics course (MATH 2830, 3800, CVEN 3611, ELEC 3817, or BANA 2010). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CEMT 4233 - Construction Cost Estimating**

This course presents the application of scientific principles to rough and detailed cost estimating; cost indexing; bidding document, process and contract documents; quantity take off; concepts and statistical measurements of the factors involved in direct costs; overhead costs, cost markups and profits; project financing and cashflow analysis; cost control; computerized estimating and building information modeling; life cycle cost; and value engineering. Students are expected to use RSMeans building construction cost data to develop



a detailed cost estimate of a project during the semester. Prereq: CEMT 2100 or CVEN 4230. Max hours: 3 Credits **Semester Hours:** 3 to 3

### **CEMT 4234 - Sustainable Construction**

This course will serve as an introduction to major components and technologies used in sustainable design and construction to create healthy, environmentally-sensitive built environments. Content focuses on construction processes, renewable energy systems, healthy buildings, natural and cultural resources, and traditional as well as cutting-edge building techniques. Course participants will gain knowledge about effective sustainable practices through active learning by engaging in case studies, class presentations, and group activities. Numerous guest speakers will share first-hand experience regarding implementation and professional practice of sustainable principles in the real-world. Prereq: CEMT 2100 or CVEN 4230. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CEMT 4236 - Project Management Systems**

Address the basic nature of managing projects and the advantages and disadvantages to this approach. Introduce the characteristics, techniques, and problems associated with initiating, planning, executing, controlling, and closeout of projects. Learn about the International Standards of PM and how to use them. Develop a management perspective about projects to help develop future project managers. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CEMT 4240 - Building Information Modeling (BIM)**

Building Information Modeling is an advanced approach to facility design and construction using object-oriented 3-D models. It can be integrated in the design and construction for analytical purposes, including design, visualization, quantity takeoff, cost estimating, planning, and facility management. Prereq: CEMT 2100 or CVEN 4230. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CEMT 4242 - Construction Safety**

This course is a study of safety practices in the construction industry and the specific safety procedures used in safety management of a construction project. Topics include safety risks inherent in construction projects, the roles of government, the judicial system, the insurance industry, designers and project owners in safety management and the economic impact of injuries. Advanced topics include safety risk quantification and analysis, design for safety and emerging technologies. Prereq: CEMT 2100 or CVEN 4230. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CEMT 4939 - Internship**

Construction Engineering and Management Internship. Repeatable. Max hours: 6 Credits.

**Semester Hours:** 1 to 6

### **CEMT 5232 - Construction Planning and Control**

This course presents knowledge on planning and controlling of construction projects. Students will learn the basics of construction planning to develop work breakdown structure and activity list, estimate activity cost and duration, and identify job logic and precedence relationships. Several scheduling techniques will be presented in this class, including bar chart, network scheduling, uncertainty in scheduling (PERT), limited resources scheduling, resource leveling, line of balance, and time-cost tradeoff analysis. Furthermore, this class will provide knowledge on construction control techniques, including cash flow analysis, integrated time-cost control, and value engineering. Students will acquire skills on the use of currently available computer scheduling and planning software such as Primavera 6 and Navisworks Manage to create 4D models and visualize the sequence of the construction activities. In addition, students will form teams and work on a project throughout the semester to apply the skills that they learn in class. Cross-listed with CVEN 4232. Prereq: CEMT 2100 or CVEN 4230 and a statistics course (MATH 2830, 3800, CVEN 3611, ELEC 3817, or BANA 2010) or graduate standing. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

### **CEMT 5233 - Construction Cost Estimating**

This course presents the application of scientific principles to rough and detailed cost estimating; cost indexing; bidding document, process and contract documents; quantity take off; concepts and statistical measurements of the factors involved in direct costs; overhead costs, cost markups and profits; project financing and cashflow analysis; cost control; computerized estimating and building information modeling; life cycle cost; and value engineering. Students are expected to use RSMeans building construction cost data to develop a detailed cost estimate of a project during the semester. Prereq: CEMT 2100 or CVEN 4230.

Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CEMT 5234 - Sustainable Construction**

This course will serve as an introduction to major components and technologies used in sustainable design and construction to create healthy, environmentally-sensitive built environments. Content focuses on construction processes, renewable energy systems, healthy buildings, natural and cultural resources, and traditional as well as cutting-edge building techniques. Course participants will gain knowledge about effective sustainable practices through active learning by engaging in case studies, class presentations, and group activities. Numerous guest speakers will share first-hand experience regarding implementation and professional practice of sustainable principles in the real-world. Prereq: CEMT 2100 or CVEN 4230 or graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CEMT 5235 - Advanced Construction Engineering**

This course starts with a quick overview of Construction Engineering Management including organizations involved, current approaches and challenges and approaches. The course then covers contracts, quality management, risk management and decision analysis, financial management, safety, and temporary construction facilities. Cross-listed with CVEN 4235. Prereq: CEMT 2100 or CVEN 4230 or graduate standing. Max Hours: 3 Credits. **Semester Hours: 3 to 3**

### **CEMT 5236 - Project Management Systems**

Address the basic nature of managing projects and the advantages and disadvantages to this approach. Introduce the characteristics, techniques, and problems associated with initiating, planning, executing, controlling, and closeout of projects. Learn about the International Standards of PM and how to use them. Develop a management perspective about projects to help develop future project managers. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **CEMT 5237 - Advanced Project Management**

A survey of advanced topics in project management building on the Project Management Systems course and utilizing the Project Management of Knowledge. Case studies, complex problems, and a class project will be utilized in the course to bring a practical perspective to the conceptual lessons. Cross-listed with CVEN 6237. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **CEMT 5238 - Integrated Construction Leadership**

The course is an integrated architecture, engineering, and construction (AEC) business course bringing together executives, principals, and managers to current industry topics to provide students an opportunity to apply management and leadership principles from the various fields to case study projects. Cross-listed with CVEN 6238. Prereq: CEMT 2100 or CVEN 4230 or graduate standing. Max Hours: 3 Credits. **Semester Hours: 3 to 3**

### **CEMT 5240 - Building Information Modeling (BIM)**

Building Information Modeling is an advanced approach to facility design and construction using object-oriented 3-D models. It can be integrated in the design and construction for analytical purposes, including design, visualization, quantity takeoff, cost estimating, planning, and facility management. Prereq: CEMT 2100 or CVEN 4230. Max Hours: 3 Credits. **Semester Hours: 3 to 3**

### **CEMT 5242 - Construction Safety**

This course is a study of safety practices in the construction industry and the specific safety procedures used in safety management of a construction project. Topics include safety risks inherent in construction projects, the roles of government, the judicial system, the insurance

industry, designers and project owners in safety management and the economic impact of injuries. Advanced topics include safety risk quantification and analysis, design for safety and emerging technologies. Prereq: CEMT 2100 or CVEN 4230. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CEMT 5246 - Construction, Business and Innovation**

AEC professionals rely on technical and soft (social) skills to solve complex challenges. The interdisciplinary nature of project delivery, to an increasing extent, requires professionals to collaborate across disciplines. This course explores innovation and collaboration at the interface of construction and business. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CEMT 6235 - Advanced Construction Engineering**

This course starts with a quick overview of Construction Engineering Management including organizations involved, current approaches and challenges and approaches. The course then covers contracts, quality management, risk management and decision analysis, financial management, safety, and temporary construction facilities. Prereq: CEMT 2100 or CVEN 4230 or graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CEMT 6237 - Advanced Project Management**

A survey of advanced topics in project management building on the Project Management Systems course and utilizing the Project Management of Knowledge. Case studies, complex problems, and a class project will be utilized in the course to bring a practical perspective to the conceptual lessons. Cross-listed with CVEN 5237. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CEMT 6238 - Integrated Construction Leadership**

The course is an integrated architecture, engineering, and construction (AEC) business course bringing together executives, principals, and managers to current industry topics to provide students an opportunity to apply management and leadership principles from the various fields to case study projects. Cross-listed with CVEN 5238. Prereq: CEMT 2100 or CVEN 4230 or graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **Counseling**

### **COUN 5000 - Human Sexuality**

Students will become familiar with human sexuality across the life span. Ecological and family systems theories will provide an understanding of human sexuality from a systemic perspective. Implications for working with individuals, families, and couples will be examined. Prereq: COUN

5010. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5010 - Counseling Theories**

Focuses on counseling theories: Psychodynamic, Adlerian, Person-Centered, Existential, Behavioral, including DBT, Cognitive Behavioral, Gestalt, & Reality Therapy. Also includes an overview of the history of the counseling profession and the role and function of counselors in various settings. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5050 - Foundations of Student Affairs**

This course examines theories of college student development including student learning and growth during the postsecondary years. This course will provide an introduction to psychosocial, cognitive, moral, and social identity development theories used to explain college student development. Cross-listed with HDFR 4050. Repeatable. Max Hours: 6 Credits.

**Semester Hours:** 3 to 3

### **COUN 5070 - Law and Ethics in Higher Ed and Student Affairs**

This course will introduce students to the laws that impact college students and institutions of higher education. Graduate students will obtain knowledge of and the necessary skills to apply a code of ethics to their practice in student affairs. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5100 - Techniques of Counseling**

Students practice basic counseling skills, develop therapeutic intervention strategies, and improve the effectiveness of their communication by practicing listening and responding. Videotaped role-plays are utilized. Prereq: COUN 5010 and 5810. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **COUN 5110 - Group Counseling**

Learn group theory and dynamics. Practice facilitating a group. Learn about screening, group membership and styles, roles and behavior, termination of groups. Extensive practice in laboratory setting. Prereq: COUN 5010, COUN 5100 and 5810. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **COUN 5120 - Counseling Grief and Loss**

This elective course is an introduction and study of the field of bereavement in counseling. Studies focus on relating to client's experience with grief, loss and/or trauma through lectures, speakers, videos, readings, experiential in-class simulations, self-discovery and introspection. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5130 - College Student Development**

This course examines theories of college student development including student learning and growth during the postsecondary years. This course will provide an introduction to psychosocial, cognitive, moral, and social identity development theories used to explain college student development. Cross-listed with HDFR 4130. Repeatable. Max Hours: 6 Credits.

**Semester Hours:** 3 to 3

### **COUN 5150 - Family Counseling/Therapy**

Introduces systemic and family theories and intervention strategies. Emphasis on historical development of systems theory. Prereq: COUN-MA and COUN 5010 and 5810 or COUN-MA CFT. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5160 - Techniques in Family Counseling/Therapy**

This didactic and experiential course presents an overview of techniques and theories in family therapy. It will help students continue to develop a theoretical framework for engaging in theory driven therapeutic interventions via practice family therapy role plays Prereq: COUN 5010, 5100 and 5150. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits **Semester Hours:** 3 to 3

### **COUN 5180 - Counseling Couples**

This course is didactic and experiential dealing with therapeutic techniques applied to the improvement of intimate/couple relationships. Emphasis is placed on empirically based assessment, diagnosis, and treatment of couples' problems. Special topics include: co-habiting couples, gay and lesbian couples, remarried couples, cross-cultural couples, ethical and moral dimensions of couple counseling, unique couple issues, and the effectiveness of couple therapy. Prereq: COUN 5010, 5100 and 5150. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5280 - Addictions Counseling**

Includes treatment strategies for clinicians in addressing varieties of addictive behaviors including substance, abuse, eating disorders, gambling and sexual addiction. Cultural dimensions of addictions are also considered. Restricted to Graduate level students in the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5330 - Counseling Issues and Ethics**

An in-depth examination of ethical and legal issues in the field. Topics include working with individuals and family systems, licensure, professional associations, record keeping and statutory requirements. Prereq: COUN 5010 and 5810. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5400 - Career Development**

Development of competencies in career development counseling. Theories of work systems, psychological dynamics, information systems, and decision making models are covered. Interacting with work or family systems and other subsystems is emphasized. Restricted to Graduate level students in the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5425 - Developing & Implementing a School Counseling Program: ASCA**

The course is specifically designed to provide training for school counselors and related professionals to develop and implement a comprehensive counseling and guidance program, which incorporates the ASCA National Model. Prereq: COUN 5010 and 5815, EDHD 6200, RSEM 5110 and 5120. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5500 - Diversity, Inclusion, Social Justice in Higher Education**

An examination of society, media, and public and educational policy and their impact on higher education access and persistence for marginalized groups. Students are called to consider how student affairs professionals might promote social justice for marginalized student groups. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5810 - Multicultural Counseling Issues for Individuals and Families**

Offers introduction to competent multicultural and social justice counseling. Students develop the awareness, knowledge, skills and action competences necessary for culturally responsive interventions with diverse communities. The course explores issues of ethnicity, culture, age, disability, and sexual orientation and learn about multicultural and social justice interventions for addressing these issues in counseling. Restricted to Graduate level students in the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5815 - Introduction to School Counseling**

This course emphasizes the unique and varied role of the school counselor and school counseling programs in diverse public schools. The course focus will be on learning the various skills necessary to meet the needs of school age students and others in the school community. In addition, the course will cover The ASCA model of comprehensive developmental school counseling activities, and focus on practical resources for counseling students in diverse school settings. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5820 - Strategies of Agency Counseling**

Students learn the role and function of the counselor in community agency settings. Intervention strategies, consultation, administration of community mental health agencies. Prereq: COUN 5010 and 5810. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5825 - The Business Of Private Practice**

This course is designed to teach students how to start and manage a successful private practice in counseling. Emphasis is placed on understanding and navigating the business side of professional counseling. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5830 - Special Topics**

Specific topics vary from semester to semester. Intervention strategies with children, issues in abuse, violence, incest, legal issues, adult counseling, grief, death and dying, private practice. Restriction: Restricted to COUN majors within the School of Education and Human Development. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **COUN 5835 - Gender And Sexual Orientation**

Investigates constructions of gender and sexuality in the systemic context of individuals, relationships, families, and culture. Emphasis will be placed on developing critical thinking and clinical skills that engage diverse clients in a respectful, ethical, and effective manner in therapy. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5840 - Independent Study: COUN**

Individually directed research activity on special topics not covered by course offerings. Degree students only, with advance approval by major, professor and department chair. Restriction: Restricted to COUN majors within the School of Education and Human Development. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 4

### **COUN 5910 - Practicum in COUN**



Supervised counseling practice in the counseling lab and appropriate settings (150 clock hours). Emphasis on individual and group counseling techniques and therapeutic intervention strategies. Prereq: all counseling course work must be completed. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **COUN 5915 - Practicum in School Counseling**

This class will provide school track students with 3 credits of fieldwork at a developmental level of their choice. The course will require students to work with a school counselor activities that the counselor is assigned under supervision. Students will develop skills in needs assessment, developing classroom guidance activities and running the activities; they will sit in on IEP conferences, help conduct college fairs, administer career assessment inventories and standardized assessments, learn to place students in appropriate classes, and provide responsive counseling services on an as needed basis. Prereq: COUN 5010, COUN 5110, COUN 5400, COUN 5425, COUN 5810, COUN 5815, COUN 6230. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 5930 - Internship in Counseling**

Supervised internship of 600 clock hours. Intern performs activities of a regularly employed professional in an approved community site. Prereq: COUN 5910. Restriction: Restricted to COUN majors within the School of Education and Human Development. Students must register for 3 or 6 credit hours. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 6

### **COUN 5940 - Internship in Higher Education and Student Affairs**

The internship is the final academic experience in the acquisition of the Master's degree in counseling. This course builds on the theoretical and skill-building courses and is intended to give students practical experience in higher education and student affairs. Emphasis on personal and professional development as higher education and student affairs professionals. Students must register for 3 or 6 credit hours. Prereq: COUN 5050 and COUN 5500. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 6

### **COUN 6000 - Introduction to Sex Therapy**

Provides an overview of human sexuality over the life cycle, addressing social, psychological, and physiological aspects of human sexuality. Etiology of human sexuality diagnoses and treatment of problems related to human sexuality are addressed. Note: This course is a component in the couple and family program and required for MFT licensure. Prereq: COUN 5010, COUN 5100, COUN 5110, COUN 5150. Prereq or Coreq: COUN 5160. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COUN 6100 - Spiritual Dimensions of Counseling**

A didactic and experiential course involving the following content areas: theories of spiritual development, a survey of religious traditions, assessment, ethical issues, self-of-the-therapist issues, and treatment interventions and strategies in working with clients' values. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COUN 6140 - Counseling Children, Adolescents and Their Parents**

A didactic and experiential course addressing child, adolescent, and parental/family issues. Counseling techniques, including play therapy, and parent education are taught and practiced. Assessment tools and specific strategies are used to increase positive family relationships. Prereq: COUN 5010, COUN 5100, COUN 5150 and EDHD 6200. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COUN 6150 - Introduction to Emotionally Focused Couple Therapy**

This course is designed to help students conceptualize couple distress from an attachment perspective and gain foundational knowledge in Emotionally Focused Therapy (EFT). The organization of the course includes observation of therapy sessions, presentations of theory and clinical techniques, skills training exercises, and discussion of specific cases, clinical material and issues. Prereq: COUN 5010, COUN 5100, COUN 5150, COUN 5160. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COUN 6160 - Advanced Assessment: Theory and Treatment in Family Systems**

This is a didactic and experiential course focusing on family assessment instruments and their use in family therapy. Emphasis is placed on the role of assessment in family therapy, the relationship of assessment to treatment planning and evaluation, gaining familiarity with a variety of assessment instruments, and learning to apply assessment skills to real-world clients. Prereq: COUN 5010, 5100, 5150, 5160, 6250 and RSEM 5110. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits **Semester Hours:** 3 to 3

## **COUN 6170 - Issues In Family Studies**

This is a family studies course that is both didactic and experiential. It is designed to assist you to become more informed about contemporary family issues that affect you, your clients, and society. The course major components include: theories of "normal" family processes and life cycle development, family composition, and social issues that impact families and family therapy. Prereq: COUN 5010. Restriction: Restricted to COUN majors within the School of

Education and Human Development. Cross-listed with COUN 7170. Max hours: 3 Credits.  
**Semester Hours:** 3 to 3

### **COUN 6230 - Developmental Counseling in Schools: Prevention & Intervention**

This course offers the tools to provide developmental counseling services in the schools, including prevention through classroom counseling activities linked with the curriculum, and responsive services. Prereq: COUN 5100, 5110, 5400, 5810, EDHD 6200, RSEM 5110 and 5120. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 6240 - Consultation Strategies**

Focuses on the development of consultation skills and implementation of strategies. Students are exposed to major theories of the consultation process. In addition, this course provides the opportunity to practice consultation and implementation strategies within a system: an agency, business setting, or educational setting. Prereq: COUN 5010 or permission of instructor. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 6250 - Mental Health Diagnosis**

This course addresses individual diagnosis from a variety of perspectives: Biological, developmental, medical, neurological, psychosocial, cultural and interpersonal. It will provide students with a broad theoretical base for understanding psychopathology, from not only an individual, descriptive, symptom-based perspective as presented in the DSM-5, but also from a contextual systemic perspective including developmental hallmarks, familial patterns and socio-cultural contributors. Prereq: COUN 5010 and 5810. Restriction: Restricted to COUN and EDHD majors within the School of Education and Human Development. Max hours: 3 Credits.  
**Semester Hours:** 3 to 3

### **COUN 6310 - Facilitating Sociopolitical Development Theory & Actn**

Participants will learn to use dialogic instructional strategies to create student-teacher partnerships that respect student voice and affirm the lived experiences of students. Participants will learn strategies to engage students and themselves in critical inquiry about identity, privilege, and social justice. Cross listed with COUN 7310. Max hours: 3 Credits.  
**Semester Hours:** 3 to 3

### **COUN 6320 - Participatory Research Methods in Context**

This course will introduce students to participatory research methods, including Youth Participatory Action Research (YPAR), PAR, youth participatory evaluation, and design based research. Graduate students will study current examples of this work, design, and conduct a

study in their professional context. Cross listed with COUN 7320. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **COUN 6330 - Advanced Seminar in Counseling and Psychotherapy**

Professional analysis of major trends in counseling and psychotherapy. Specific emphasis topics identified. Prereq: COUN 5010, 5100 and 5330. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 6810 - Advanced Multicultural Counseling**

Offers essential preparation for competent multicultural and social justice counseling practice with culturally diverse clients, and families. Students learn about effective multicultural counseling and advocacy skills. The course explores the impact of ethnicity, culture, age, disability, sexual orientation, etc., on individual behavior, interpersonal relationships, and learn about multicultural and social justice interventions and techniques for addressing these issues in counseling. Prereq: COUN 5010, 5100 and 5810. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **COUN 6840 - Independent Study**

Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 4 Credits. **Semester Hours:** 1 to 4

### **COUN 6910 - Advanced Practicum in Counseling**

Restriction: Restricted to COUN majors within the School of Education and Human Development. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 6

### **COUN 6950 - Master's Thesis**

Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **COUN 7100 - Advanced Theories and Techniques in Psychotherapy**

Learn and practice advanced techniques for addressing adult and adolescent clinical problems. Examine efficacy research on specific counseling techniques as associated with particular approaches in counseling. Prereq: COUN 5010, 5100 and 5820. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

## **COUN 7170 - Issues in Family Studies**

This is a family studies course that is both didactic and experiential. It is designed to assist you to become more informed about contemporary family issues that affect you, your clients, and society. The course major components include: theories of "normal" family processes and life cycle development, family composition, and social issues that impact families and family therapy. Cross-listed with COUN 6170. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COUN 7310 - Facilitating Sociopolitical Development Theory & Actn**

Participants will learn to use dialogic instructional strategies to create student-teacher partnerships that respect student voice and affirm the lived experiences of students. Participants will learn strategies to engage students and themselves in critical inquiry about identity, privilege, and social justice. Cross listed with COUN 6310. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COUN 7320 - Participatory Research Methods in Context**

This course will introduce students to participatory research methods, including Youth Participatory Action Research (YPAR), PAR, youth participatory evaluation, and design based research. Graduate students will study current examples of this work, design, and conduct a study in their professional context. Cross listed COUN 6320. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **COUN 7800 - Supervision in Counseling and Psychotherapy**

Examines training principles, processes, and practices in clinical supervision. Emphasis on individual and family therapy supervision. Prereq: COUN 5010, 5100, 5910 and 5930. Restriction: Restricted to COUN majors within the School of Education and Human Development. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 3

## **Criminal Justice**

### **CRJU 1000 - Criminology and Criminal Justice: An Overview**

This course is designed to provide an overview of the criminal justice process and the criminal justice system in general. Concepts of crime, deviance and justice are discussed and general theories of crime causality are examined. Special emphasis is placed on the components of the criminal justice system: the police, the prosecutorial and defense functions, the judiciary and the field of corrections. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 2000 - Professional Development in Criminal Justice**

In this course, students will explore, examine, and reflect on their strengths, interests, and personality assessments as they relate to the criminal justice field and professional development. Participants will conduct career-related research and develop individualized action plans designed to bridge the gap between their current skills and experiences and those desired by employers in the criminal justice field. Prereq: UNIV 1110. Restriction: Restricted to Criminal Justice majors. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **CRJU 2041 - Criminological Theory**

This course examines the nature and causes of crime and policies within and outside the criminal justice system to predict, prevent, and correct criminal, delinquent, and deviant behavior. It involves a critical appraisal of biological, psychological, economic, and sociological theories and frameworks that explain crime, delinquency, and deviance. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3100 - Research Methods**

This course teaches students how to formulate research questions related to criminology and crime and justice. It addresses how to design research in the field, including choosing an appropriate method and sampling strategy and collecting, analyzing, interpreting, and reporting data and findings. Specific substantive elements are included in research design (e.g., various types of probability and non-probability sampling; strengths and weaknesses of surveys, interviews, and other methodological approaches; experimental and non-experimental designs; qualitative techniques; etc.) Other substantive topics are addressed, including research ethics, consuming research, and writing in different settings. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3150 - Statistics for Criminal Justice**

This course introduces descriptive and inferential statistics and the use of computer software to analyze criminal justice data. Course content includes hypothesis testing and the basic analysis of continuous and discrete dependent variables related to criminology and criminal justice. Prereq: CRJU 3100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3160 - White-Collar Crime**

Employs social science and legal approaches to examine crime committed by corporations as well as by individuals in white-collar occupations. Topics include how such crimes are socially defined, who commits them, which social contexts promote them, who is victimized, and how society and the criminal justice system respond. Cross-listed with CRJU 5574. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3220 - Community Corrections**

This course focuses on innovative community-based strategies for dealing with criminal offenders. Correctional alternatives to imprisonment discussed in this course include probation and parole and various community programs, such as day reporting centers, electronic monitoring, half-way houses, and boot camp programs. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3250 - Violence in Society**

This course surveys the relationships between mass media, crime, offenders, victims, and criminal justice. It explores how the criminal justice system and its agents, accused and convicted offenders, and victims, are portrayed in the media and the influence of these depictions on society, public policy, and the criminal justice system. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3251 - Crime and the Media**

This course surveys the relationships between mass media, crime, offenders, victims, and criminal justice. It explores how the criminal justice system and its agents, accused and convicted offenders, and victims, are portrayed in the media and the influence of these depictions on society, public policy, and the criminal justice system. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3252 - Violent Offenders**

This course consists of a historical overview of violence in American society. Course content includes an examination of violent crime rates over time, societal explanations for changes in rates and an examination of the theoretical causes and preventative strategies for acts of violence. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3270 - Case Studies in Criminal Justice**

This seminar examines the lives of people who live on the margins of a society that perceives them as outsiders. Ethnographic studies that utilize observation, participant observations, and interviews as their primary research methodology are assigned in order to develop a critical understanding of the social marginalization and cultural aspects of the lives of real human beings living constantly on the edge of the law. Cross-listed with CRJU 5270. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3280 - Trauma Among Correctional Populations**

This course provides a comprehensive overview of trauma and the relationship of trauma to criminal offending. Topics includes the definition of trauma, the impact of trauma on development, lifelong consequences of chronic exposure to adverse events, and how to integrate knowledge about trauma into organizational policies in correctional settings. The class

focuses on understanding the components of a trauma-responsive environment in correctional settings and incorporating trauma recovery principles into practice. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **CRJU 3285 - Trauma in the Criminal Justice System**

This course examines trauma as widely prevalent among those who are served by the criminal justice system and experienced disproportionately among criminal justice professionals. Trauma prevalence, theory, prevention, and interventions through a trauma stewardship lens for victims of multiple forms of trauma, including vicarious traumatization and secondary traumatic stress, will be emphasized through an all-inclusive view across the criminal justice continuum. Cross-listed with CRJU 5285. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3290 - Capital Punishment**

This course examines in-depth a comprehensive range of issues surrounding capital punishment. Specifically, it looks at the history of capital punishment, methods of execution, legal issues and case law, deterrence, miscarriages of justice, discrimination in the capital charging and sentencing system, and the role of the death penalty internationally. The coverage of these issues relies on many sources, including scholarly readings, non-fiction books, court cases, websites, videos and documentaries, speeches, and media. Cross-listed with CRJU 5290. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3310 - Contemporary Issues in Law Enforcement**

This course examines law enforcement's role in contemporary society and the impact of police interaction on other segments of the criminal justice system. Special attention is paid to controversies related to police training and education, career development and community relations. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3320 - Police-Community Relations**

This course focuses on the police and community response to crime. Course content includes an overview of the major concepts and issues involved in what many consider to be a major fundamental shift in the approach and operations of modern policing. The origins, meaning, development and experiences of community policing and various assessments of the advantages and disadvantages of community policing are emphasized. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **CRJU 3330 - Serial Killers**

This course looks at various aspects of serial killing, including definitions, statistics, and demographics of serial killers and their victims. It examines factors that are correlated with serial killing, as well as criminal justice responses to serial killers (e.g., investigative techniques,



prosecuting and defending accused killers, etc.) It also includes cases of serial killers. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3410 - Probation and Parole**

This course is appropriate for students who have a specific interest in the role of probation and parole as correctional sanctions in community settings. Substantive topics, including the presentence investigation report, privatization, and the roles and responsibilities of probation and parole officers, are discussed. Particular attention is paid to research on the effectiveness of probation and parole, factors that contribute to the successful completion of probation and parole, and the role that the community and citizens play in these community corrections processes. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3420 - Pleas, Trials and Sentences**

This course analyzes case materials involving pleas, trials, and sentences. Course content includes the dimensions of criminality, the specific elements of major crimes, plea bargaining, the use of confessions, fair trial procedures, and various aspects of criminal sanctions, including cruel and unusual punishments. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3510 - Drugs, Alcohol, and Crime**

This course looks at the socially constructed nature of drugs and drug policy. It explores the connection between drugs and crime within the socio-historical context of contemporary U.S. drug policy. Special emphasis is placed on the relationship between drugs and alcohol abuse and criminal offending, including the criminal justice system responses to possessing, distributing, and using illegal substances. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3520 - Juvenile Justice**

This course examines the development, change, and operation of the American juvenile justice system and the social factors that shape the identification and treatment of juvenile offenders. Special emphasis is placed on juvenile law and methods of dealing with youthful offenders. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3530 - Juvenile Delinquency**

This course looks at deviant and delinquent behavior committed by minors in American society. It explores the social construction of juvenile delinquency and factors and conditions contributing to at-risk and delinquent behavior. Finally, it examines the control and treatment of juvenile offenders prevention programs. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 3540 - Crime and Delinquency Prevention**

This course provides students with an overview of issues related to crime and delinquency prevention, both from criminological and criminal justice points of view. Crime prevention programs that encompass both the individual and community levels are examined. Responses to juvenile offenders-ranging from prevention and diversion to institutional corrections and after care are explored in context of youth policy generally. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **CRJU 3575 - Offenders With Mental Health Disorders**

Examines the offender who may be mentally disordered. Special attention is paid to the various phases of the criminal justice system where psychiatrists are involved (e.g., diversion, fitness, insanity and sentencing), dangerous sex offender legislation, "not guilty by reason of insanity" and "guilty but mentally ill" statutes, and issues concerning confidentiality, informed consent, and treatment. Cross-listed with CRJU 7575 and 5575. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **CRJU 4010 - Public Service in Emergency Management and Homeland Security**

Introduces emergency management and homeland security including: management of hazards, emergencies, disasters, and the networks of government and nonprofit organizations providing services. Focuses on principles of emergency management and homeland security at state and local jurisdictional levels. Cross-listed with PUAD 4010, PUAD 5650, and CRJU 5650. Prereq: CRJU 1000. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **CRJU 4012 - Principles of Emergency Management**

Introduces the discipline and practice of emergency management. Topics include administrative practice and processes by which public policy shapes governmental responses to hazards, emergencies, and disasters. Cross-listed with CRJU 5655, PUAD 4012, and PUAD 5655. Max Hours: 3 Credits. **Semester Hours: 3 to 3**

### **CRJU 4015 - Intelligence Writing and Briefing**

This course provides an overview of intelligence analysis and aims to provide the skills and tools necessary to effectively communicate results to consumers. Students will be familiarized with the analytical, perceptual, and cognitive pitfalls of conducting intelligence analysis and learn a variety of strategies for overcoming these problems, preparing professional intelligence products, and presenting executive-level intelligence briefings. Cross-listed with CRJU 5015. Max Hours: 3 Credits. **Semester Hours: 3 to 3**

### **CRJU 4042 - Corrections**

This course consists of an overview of the field of penology and corrections. Attention is paid to conflicting philosophies of punishment, criminological theory as it applies to the field of

corrections, the selectivity of the process through which offenders move prior to their involvement in correctional programs, institutional corrections, alternative correctional placements, and empirical assessments of the short and long-term consequences of one's involvement in correctional programs. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4043 - Law Enforcement**

This course presents an overview of the role of police in the United States. Attention is placed on the origins of policing, the nature of police organizations and police work, patterns of relations between the police and the public, discretion, and the police role in a sociological context. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4044 - Courts and Judicial Process**

This course examines the basic functions, structure, and organization of the federal and state court systems, with special attention on the criminal court system. It looks at the courtroom workgroup and agents within it, including the prosecutor, defense attorney, and judge. It focuses on the influence of judicial behavior on the court process by examining judges' policy preferences, legal considerations, group processes within courts, and courts' political and social environments. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4100 - Administration of Criminal Justice**

Analyzes the policies and practices of agencies involved in the criminal justice process, from the detection of crime and arrest of suspects through prosecution, adjudication, sentencing and imprisonment, to release. The patterns of decisions and practices are reviewed in the context of a systems approach. Cross-listed with CRJU 5100. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4120 - Race, Class, and Justice**

This course examines the relationships between race, social class, and crime. Attention is given to theoretical explanations, empirical research, and patterns of criminal behavior. The class focuses on historical frameworks that are relevant to current perspectives on the impact and interactions of race, class, and crime in the field. It examines race, class, and race-by-class disparities and discriminatory practices at different phases of the justice system from detainment through sentencing and appeals. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4121 - Ethics in Criminal Justice**

This course is designed to prepare students to identify and critically examine ethical issues in the criminal justice system by applying ethical decision models. It also provides students with the opportunity to analyze how they would resolve these issues according to their own values

and beliefs while staying within the boundaries of the law and formal and informal professional ethics. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4130 - Poverty, Crime, and Justice**

This course analyzes theories and empirical research related to the causes of criminal behavior committed by individuals of lower socio-economic status. Further, it examines the economic and social costs of crimes committed by under-resourced individuals and crime-prevention strategies that are connected to crimes committed by under-resourced individuals. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4140 - Domestic Violence and Crime**

This course examines the criminal justice systems response to intimate partner violence by focusing on the interactions between victims, offenders, and components of the criminal justice system. By exploring the dynamics of intimate partner violence, this course addresses the theories, history, research, legislation, and policy implications related to the criminal justice system's response to intimate partner violence. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4150 - Sex Offenders and Offenses**

This course explores historical and current practices of the criminal justice system to address sex offenders and offenses. Topics include the history of sexual abuse, etiology of offenders, victims' issues, juvenile sex offenders, risk assessment, and treatment/supervision approaches to sex offenders and offenses. Prereq: CRJU 1000. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4170 - Victimology**

This course involves the scientific study of crime victims and focuses on the physical, emotional, and financial harm people suffer at the hands of offenders. Emphasis is placed on victim-offender relationships, interactions between victims and the criminal justice system, and connections between victims and other social groups and institutions. Theories, history, research, legislation, and policy implications related to the social construction of "the victim" are explored. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4171 - Homicide Studies**

This class examines criminal homicide from all angles: the offenders, the victims, the police, prosecution, defense, jurors, and judges. It looks at investigative techniques and the latest science involved in criminal investigation, jury selection, and other criminal justice system issues. It focuses on what is arguably the most serious form of homicide, murder, exploring

sensational cases that involve delving into the psyche of murderers. Max hours: 3 Credits.  
**Semester Hours:** 3 to 3

### **CRJU 4180 - Comparative Study of Criminal Justice Systems**

This course analyzes the dynamics of criminality and the social responses to crime across countries. Special emphasis is placed on methods of comparative legal analysis utilized to examine international differences in crime and justice, international cooperation in criminal justice, and crime and development. Prereq: CRJU 1001. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4190 - Women, Crime, and Justice**

This course explores issues surrounding women as offenders and victims. It investigates explanations for women's involvement in illegal activities and looks at gender-based disparities and discrimination in the criminal justice system's treatment of women who are accused and convicted of crimes. The class also examines women's participation in criminal justice professions, including law enforcement, corrections, judicial processes, and law. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4200 - Wrongful Convictions**

Explores the continuum of justice-system errors ranging from persons who are falsely accused (arrested, prosecuted, and tried) to those who are wrongly convicted and imprisoned or sentenced to death row and erroneously executed. Cross-listed with CRJU 5200. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4210 - Prisoner Reentry**

Focuses on prisoner reentry, including strategies to prepare inmates for release, reduce recidivism, and facilitate adjustment in the community while meeting the demands of public safety. Cross-listed with CRJU 5210. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4230 - Treatment Approaches in American Corrections**

This course examines the origins and historical development of prisons and jails in America. Particular attention is given to the impact of reform movements; the rise of centralized correctional systems; and regional and other socially differentiated variations in the practice of punishment. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4252 - Criminal Offenders: Evidence-Based Decision-Making**

This course will introduce the core principles of evidence based programming and tools of motivational interviewing as it is used currently with the offender population. In addition,

students will learn how to utilize these skills working with specific offender populations. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4310 - Leadership Roles in Criminal Justice**

The course is designed to enhance interest, experience, and knowledge in leadership that promotes professionalism and ethical behavior among criminal justice professionals. Individual and organizational dynamics are explored through a critical perspective, focusing on criminal justice roles and responsibilities. The class teaches effective leadership skills in areas such as team building, strategic planning, and decision-making. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4331 - Crime Analysis and GIS**

Serves as an introduction to the uses and applications of analysis within law enforcement, including the role of analysis in law enforcement, theories that guide analysis and police practices, commonly used data sources and technology, and techniques for various types of analysis utilized in law enforcement. Cross-listed with CRJU 5331. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4410 - Criminal Law and Constitutional Procedures**

This course focuses on substantive criminal law and constitutional rights of the accused in criminal proceedings. Course content includes the legal elements of major crimes. It also addresses legal aspects of investigation, search and seizure, arrest, custodial interrogation, the appointment of counsel, and constitutional rights that apply during trials (e.g., right to confront witnesses, be protected against self-incrimination, be tried by a jury of one's peers, etc.) Rules governing the admissibility of evidence in court are also examined. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4430 - Law and Society**

This course introduces students to the scholarly study of law. Students will become familiar with social scientific perspectives of the law, legal institutions, the legal process, and the impact of law on behavior. Particular emphasis is placed on the interplay between the social construction of crime through law, criminal behavior and individuals targeted in criminal justice processes in America. Additional topics include theories of law and legality, comparative legal systems, police, lawyers, judges, juries, and the use of social science expertise in the justice system. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4440 - Courts and Social Policy**

This course involves the study of emerging trends and issues in the administration of the courts, the emerging role of the judiciary in the administration of programs in the public and private

sectors, and the implications of court administration on social policy. Course content includes the history of the judicial approaches to the criminal justice administrative process and substantive social policy. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4450 - Homeland Security**

This course is an in-depth analysis of homeland security in the U.S. Topics include the initial concepts and strategies of securing land borders, seaports, and airports, the establishment of the Department of Homeland Security, and the functions and operations of the DHS today and in the future. Prereq: Completion of CRJU 1000. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4520 - Gangs and Criminal Organizations**

This course traces the origins and historical development of the activities known as "organized crime." These crimes are some of the most dangerous to American society and range from the commonly known offenses of gambling and narcotics to the more subtle and sophisticated, less understood but equally serious, crimes of extortion, commercial bribery, and political corruption. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4530 - Families and Intergenerational Violence**

This course focuses on the family as the primary institutional mechanism of social control. Structured around social learning theory, it explores the relationships between exposure to childhood violence and violence later in life, including dating relationships during adolescence and adulthood and violence in marital relationships. The course also looks at the impact of childhood violent victimization on juvenile delinquency, adult criminality, and violent behavior in general. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4540 - Evidence-Based Approaches in Law Enforcement**

This course provides an introduction to the uses and applications of analysis within law enforcement, including the role of analysis in law enforcement, theories that guide analysis and police practices, commonly used data sources, technology, and a practical introduction to the techniques for various types of analysis utilized in law enforcement. Prereq: CRJU 1000, 3100, and 4043. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 4600 - Special Topics in Criminology and Criminal Justice**

This highly specialized seminar addresses cutting-edge and emerging developments in the fields of criminology and criminal justice and provides students and faculty with the opportunity to explore significant themes, issues, and problems from a broad interdisciplinary perspective. Topics vary from semester to semester. Prereq: CRJU 1000. Repeatable. Max Hours: 18 Credits. **Semester Hours:** 3 to 3

## **CRJU 4700 - Community-Based Field Experience and Seminar**

Students work in small groups to complete substantive projects for government agencies and community organizations, led by faculty instructor. Topics addressed will vary depending on the needs of the community partner. Prerequisite: Completion of CRJU 1000 and CRJU 3100. Restriction: Restricted to SPA students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CRJU 4710 - Environmental Crime and Justice**

Environmental Crime and Justice will look at the disproportionate benefits and burdens of environmental "profits" (e.g., open spaces, clean air and water, etc.) and contamination (which results from behaviors that include, but are not limited to crime), as well as the implications of these disparities on certain areas, particularly communities of color and indigenous communities. The role of the government, the private sector, non-profit organizations, and the environmental justice movement in creating, perpetuating, and minimizing environmental crime and its disparities will be examined, with part of the focus being on theories within critical criminology that address issues of environmental crime injustices. The nature of environmental offenders and victims will be explored. Policies and programs that have been organized to address environmental crime and other injustices and their effects (e.g., quality of life, birth defects, childhood asthma, lead poisoning, cancer, etc.) will be reviewed, including responses by the criminal justice system to environmental crime. Students will examine critically the consistencies and inconsistencies in institutionalized mechanisms that are set up, either intentionally or more subtly, to create, reinforce, or minimize environmental crimes and injustices. Cross-listed with CRJU 5710. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CRJU 4840 - Independent Study: CRJU**

This course consists of instructor-guided research in an area of mutual interest to the student and instructor or a student-driven project supervised by the instructor. Students are responsible for selecting their area of inquiry prior to contacting the instructor. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **CRJU 4939 - Internship**

Internships involve a career-related supervised experiential course in a criminal justice or related agency. Permission to enroll must be preceded by an application for an internship. Prereq: Permission of instructor and advisor is required for undergraduate students. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 9

## **CRJU 5001 - Criminal Justice Systems, Policies, and Practice**

Examines current critical issues in the justice system affecting law enforcement, courts, corrections, and recent social developments related to personnel. The development,



implementation, and analysis of public policy in the field of criminology are explored in depth. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5002 - Criminological Theory**

Explores the origins of criminal behavior and impact of crime on society. Theories of deviant, delinquent, and criminal behavior are examined, and practical implications and application of theoretical constructs are analyzed through current research paradigms and empirical research. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5003 - Research Methods**

Examines applied research designs and analytical models. Research problems in the system are utilized to illustrate the application and interpretation of alternative research strategies. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5004 - Statistics for Criminal Justice**

Introduces principles of descriptive and inferential statistics and provides tools for understanding research findings. Topics include hypothesis testing and point estimation; bivariate and multivariate measures of association; inferential statistics; ordinary least square regressions, logistic regression analyses. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5005 - Law & Society**

Introduces a variety of topics related to the functions and societal implications of law. The course focuses on social/ legal theory and analyzes law and legal institutions from a critical perspective. Materials provide content on how to evaluate law and legal institutions, especially in relation to equality, justice, and fairness. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5010 - Seminar Nonprofit Management**

Provides an overview of principles and concepts unique to nonprofit management. Topics include executive management, funding diversity, human resource management, marketing, volunteer management and ethics. Students also are introduced to the history and importance of the nonprofit sector. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 3110 and 5110. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5015 - Intelligence Writing and Briefing**

This course provides an overview of intelligence analysis and aims to provide the skills and tools necessary to effectively communicate results to consumers. Students will be familiarized with the analytical, perceptual, and cognitive pitfalls of conducting intelligence analysis and learn a variety of strategies for overcoming these problems, preparing professional intelligence products, and presenting executive-level intelligence briefings. Cross-listed with CRJU 4015. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5100 - Administration of Criminal Justice**

Analyzes the policies and practices of agencies involved in the criminal justice process, from the detection of crime and arrest of suspects through prosecution, adjudication, sentencing and imprisonment, to release. The patterns of decisions and practices are reviewed in the context of a systems approach. Cross-listed with CRJU 7100 and CRJU 4100. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

### **CRJU 5140 - Nonprofit Financial Management**

Provides a grounding in financial management for the "non-accountant" by focusing on an array of knowledge and management skill areas necessary for allocating and controlling resources and for analyzing, reporting and protecting the fiscal health of the organization. Topics include key accounting principles, understanding and using financial statements, the budget development process, cash flow analysis, banking relationships, using the audit report, maximizing investment policy and strategy, and understanding the boundaries of tax exemption. Cross-listed with PUAD 4140 and 5140. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5150 - Domestic Violence and Crime**

This course examines the criminal justice systems response to intimate partner violence by focusing on the interactions between victims, offenders and the individual components of the criminal justice system. By exploring the dynamics of intimate partner violence this course addresses the theory, history, research, legislation and policy implications related to the criminal justice system's response to violence against women. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5220 - The American Jury System**

Examines historical and current issues in jury decision making and dynamics. The course explores issues such as jury size, eyewitness testimony, and jury reform. Court decisions are

examined as a comprehensive understanding of jurors and their role. Max hours: 3 Credits.  
**Semester Hours:** 3 to 3

### **CRJU 5240 - Gang Patterns and Policies**

Focuses on gangs, gang members, and gang activity in the United States. Topics include the origins and historical development of gangs, gang migration, gang related crime and violence, gang victimization, and the effects of gang involvement on communities and families. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5250 - Criminal Offenders**

Introduces the core principles and tools of motivational interviewing as it is used currently with the offender population. Students learn how to utilize these skills working with specific offender populations and how to motivate these often resistive clients to change their thinking patterns and behaviors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5260 - Crime and Literature**

This seminar focuses on nonfiction literature as it relates to criminality and the criminal justice system. Samples of social commentary, biographies/autobiographies, and other accounts presented within various types of nonfiction literature are examined in order to more fully understand and appreciate their impact in shaping public opinion of the criminal justice system. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5270 - Case Studies in Criminal Justice**

This seminar examines the lives of people who live on the margins of a society that perceives them as outsiders. Ethnographic studies that utilize observation, participant observations, and interviews as their primary research methodology are assigned in order to develop a critical understanding of the social marginalization and cultural aspects of the lives of real human beings living constantly on the edge of the law. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 3270. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5285 - Trauma in the Criminal Justice System**

This course examines trauma as widely prevalent among those who are served by the criminal justice system and experienced disproportionately among criminal justice professionals. Trauma prevalence, theory, prevention, and interventions through a trauma stewardship lens for victims of multiple forms of trauma, including vicarious traumatization and secondary traumatic stress, will be emphasized through an all-inclusive view across the criminal justice continuum. Cross-listed with CRJU 3285. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **CRJU 5290 - Capital Punishment**

This course examines in-depth a comprehensive range of issues surrounding capital punishment. Specifically, it looks at the history of capital punishment, methods of execution, legal issues and case law, deterrence, miscarriages of justice, discrimination in the capital charging and sentencing system, and the role of the death penalty internationally. The coverage of these issues relies on many sources, including scholarly readings, non-fiction books, court cases, websites, videos and documentaries, speeches, and media. Cross-listed with CRJU 3290. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CRJU 5301 - Crime and the Media**

Surveys the relationship between mass media and the U.S. criminal justice system. Special attention is given to the role of media in the social construction of reality. Emphasis is placed on the application of social constructionism to criminal justice related social problems. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CRJU 5320 - Police Administration**

Considers the major issues confronting police executives, such as professionalism, recruitment, selection, training, deployment, innovation, evaluation, and charges of brutality, inefficiency, and corruption. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CRJU 5325 - Qualitative Methods for Criminal Justice**

Focuses on qualitative methods applicable to research in the field of criminal justice. The primary focus is on ethnographic approaches employing such fieldwork techniques as observation, participant observation, interviews, content analysis, life histories and case studies. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CRJU 5331 - Crime Analysis and GIS**

Serves as an introduction to the uses and applications of analysis within law enforcement, including the role of analysis in law enforcement, theories that guide analysis and police practices, commonly used data sources and technology, and techniques for various types of analysis utilized in law enforcement. Cross-listed with CRJU 4331. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **CRJU 5361 - Capstone Seminar**

Synthesizes competencies gained throughout the course of study into a client-based research project. Students conduct independent research, complete a final written project demonstrating their qualifications and expertise, and orally present findings to a committee of

faculty and criminal justice professionals. Prereq: CRJU 5000, CRJU 5100, CRJU 5120, CRJU 5321. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5391 - Sex Offenders and Offenses**

Focuses on challenges practitioners face in managing sex offenders, including the development of programs and partnerships that can effectively assess, track, control, and treat sex offenders through all phases of the system. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5410 - Victimology**

Examines victim-offender relationships, interactions between victims and the criminal justice system, and connections between victims and other social groups and institutions among various populations. The course addresses the theory, history, research, legislation and policy implications related to the social construction of "the victim." Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5420 - Violence in Society**

This course examines various aspects of violence, including distribution over time and space; situations and circumstances associated with violent victimization and offending; and how social institutions, community structure, and cultural factors shape violent events. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5430 - Drugs, Alcohol, and Crime**

This course provides an interdisciplinary overview of theory, research and policy issues surrounding the relationship between drugs, alcohol and crime, and responses of the criminal justice system. Special attention is paid to the socially constructed nature of illegal substances and connections with U.S. drug policy. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5510 - Contemporary Issues in Law Enforcement**

Examines current thinking and experience with respect to changing and reforming police programs and practices. The course focuses primarily on the American police experience, reviewing major innovations, exploring their rationale, and examining organizational impediments to their implementation. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5520 - Corrections**

Examines the development and implementation of correctional systems in America. Topics include the origins of correctional efforts and the evolution of the prison system, punishment and rehabilitation rationales in the context of sentencing models, the social organization of the

prison, including inmate subcultures and staff work strategies, and the inmates' rights movement and the impact of judicial intervention in correctional settings. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5530 - Community Corrections**

Analyzes theories and practices of probation and parole, responses of paroling authorities to public pressures and court controls, and their implications for rehabilitation. Efforts to bridge institutional settings and community life, as well as the feasibility and effectiveness of treating individuals under sentence in the community, are reviewed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5540 - Juvenile Justice**

Examines policies and practices of agencies in processing youthful offenders through the juvenile court system, reviews trends in juvenile justice policymaking, and assesses changes in response to juvenile crime by both the juvenile justice and criminal justice systems. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5550 - Criminal Justice Policy and Planning**

Provides a survey of conceptual and design strategies in criminal justice policy analysis. The logic and rationale of these various strategies are contrasted, and their relative merits are critiqued. Selected policy issues in the criminal justice system are utilized to illustrate the application and interpretation of alternative strategies. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5551 - Courts, Law & Justice**

Analyzes judicial organization, court administration, and criminal court judicial decision making practices within the context of the broader operation of the criminal justice system. Special attention is paid to the social organization of the courtroom, examining the special roles of judges, prosecutors, and defense attorneys. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5552 - Criminal Justice Ethics**

Offers a normative framework within which to explore ways to increase sensitivity to the demands of ethical behavior among criminal justice personnel. The application of a normative perspective enhances the possibility that moral problems are better understood, more carefully analyzed, and rendered more tractable. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5553 - Women, Crime, and Justice**

Explores issues surrounding women as offenders, victims, and criminal justice professionals. Investigates explanations for the involvement of women in illegal activities. Analyzes the plight of battered women, rape victims, and other female victims. Examines the participation of women in law enforcement judicial processes, corrections, and lawmaking. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5555 - Profiling Criminal Behavior**

Examines the dynamics of individual criminal acts utilizing inductive and deductive methodology to profile criminal behavior, offender characteristics, crime scene investigation, evidence collection, and case linkage of specific categories of crimes. Topics include homicide, serial crime, stalking. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5571 - The Social Organization of Crime**

Explores the relationship between neighborhood social disorganization and crime from a social ecology perspective. The course examines the underlying social causes of phenomena such as criminal victimization, violent and property crime, neighborhood fear, neighborhood deterioration, and recidivism. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5572 - Race, Crime, and Justice**

Examines the influence of race in the administration of justice. Special attention is paid to the policy implications of racial disparities in the criminal justice system. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5574 - White Collar Crime**

Employs social science and legal approaches to examine crime committed by corporations as well as by individuals in white-collar occupations. Topics include how such crimes are socially defined, who commits them, which social contexts promote them, who is victimized, and how society and the criminal justice system respond. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 3160. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5575 - Offenders With Mental Health Disorders**

Examines the offender who may be mentally disordered. Special attention is paid to the various phases of the criminal justice system where psychiatrists are involved (e.g., diversion, fitness, insanity and sentencing), dangerous sex offender legislation, "not guilty by reason of insanity" and "guilty but mentally ill" statutes, and issues concerning confidentiality, informed consent, and treatment. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within

CU Denver. Cross-listed with CRJU 7575 and 3575. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5576 - Social Science in the Criminal Justice System**

Examines the use of social science as a tool for legal analysis within the criminal justice system. The course examines how social science research is used to resolve relatively simple factual disputes, then moves on to more complex issues that arise when social science is invoked to make or change law. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5644 - Environmental and Hazards Law**

This course provides a broad overview of issues in all hazards management as well as natural resource and environmental health law. It will convey knowledge of the statutes, regulations and court decisions governing the management of hazards by governmental agencies. The course will also cover aspects of environmental policy implementation and enforcement including the legal aspects of natural resource allocation and management and environmental protection. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5644. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5650 - Public Service in Emergency Management and Homeland Security**

Introduces emergency management and homeland security including: management of hazards, emergencies, disasters, and the networks of government and nonprofit organizations providing services. Focuses on principles of emergency management and homeland security at state and local jurisdictional levels. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 4010, PUAD 5650, and CRJU 4010. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5655 - Principles of Emergency Management**

Introduces the discipline and practice of emergency management. Topics include administrative practice and processes by which public policy shapes governmental responses to hazards, emergencies, and disasters. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5655, PUAD 4012, and CRJU 4012. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5710 - Environmental Crime and Justice**

Environmental Crime and Justice will look at the disproportionate benefits and burdens of environmental "profits" (e.g., open spaces, clean air and water, etc.) and contamination (which



results from behaviors that include, but are not limited to crime), as well as the implications of these disparities on certain areas, particularly communities of color and indigenous communities. The role of the government, the private sector, non-profit organizations, and the environmental justice movement in creating, perpetuating, and minimizing environmental crime and its disparities will be examined, with part of the focus being on theories within critical criminology that address issues of environmental crime injustices. The nature of environmental offenders and victims will be explored. Policies and programs that have been organized to address environmental crime and other injustices and their effects (e.g., quality of life, birth defects, childhood asthma, lead poisoning, cancer, etc.) will be reviewed, including responses by the criminal justice system to environmental crime. Students will examine critically the consistencies and inconsistencies in institutionalized mechanisms that are set up, either intentionally or more subtly, to create, reinforce, or minimize environmental crimes and injustices. Cross-listed with CRJU 4710. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5720 - Public Policies for Hazards and Disasters**

Examines public policymaking and administration related to homeland security and disasters in the United States, including the interplay between security and traditional hazards management concerns. Assesses the role of institutional processes, governmental and nongovernmental organizations in policy development and implementation. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5720. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5910 - Nature and Scope of Interpersonal Violence**

Analyzes the social, historical, political, legal, and psychological aspects of gender-based violence. Topics include definitions of the problem, demographics, children and youth exposure, and national and global perspectives. Strategies for prevention, intervention, treatment, and social change are explored. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5910. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5920 - The Psychology of Interpersonal Violence**

Addresses the contributions and limitations of current empirical and clinical psychological literatures on interpersonal violence (IPV). Special attention is paid to the effects of IPV on adult and child survivors, their psychological needs, and the contribution of psychological knowledge to understanding and addressing the problem of IPV. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5920. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5930 - Interpersonal Violence Law and Public Policy**

Examines public policy and law related to interpersonal violence (e.g., welfare reform, child maltreatment, criminal and civil court responses). Topics include the role of law enforcement agents, victim advocacy, and methods to change law and policy. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5930. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 5940 - Interpersonal Violence Leadership, Advocacy, and Social Change**

Examines different models of social change and various approaches to public address, including social movements and campaigns. Strategies for engaging diverse individuals, systems and communities to address interpersonal violence will be emphasized. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5940. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 6171 - Homicide Studies**

This class examines criminal homicide from all angles: the offenders, the victims, the police, prosecution, defense, jurors, and judges. It looks at investigative techniques and the latest science involved in criminal investigation, jury selection, and other criminal justice system issues. It focuses on what is arguably the most serious form of homicide, murder, exploring sensational cases that involve delving into the psyche of murderers. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 6600 - Special Topics in Criminal Justice**

Specialized seminar intended to provide students and faculty with the opportunity to explore significant themes, issues, and problems in the field of criminal justice. Topics vary from semester to semester. Course may be taken for credit more than once, provided subject matter is not repeated. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max Hours: 18 Credits. **Semester Hours:** 3 to 3

### **CRJU 6840 - Independent Study: CRJU**

Affords the student the opportunity to pursue creative research activities under the individual supervision of a full-time faculty member. No more than six semester hours of credit for independent study may be applied toward the MCJ degree. MCJ Prereq: 12 semester hours of criminal justice course work and permission of instructor. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **CRJU 6910 - Internship in Criminal Justice**

For students who have not had practitioner experience, a full- or part-time internship is required. Note: Masters students must have completed a minimum of 18 credit hours at the graduate level to take this course. Dual Degree students must have completed a minimum of 6 credit hours at the graduate level. Minimum cumulative GPA of 3.0 required to take this course. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CRJU 6950 - Master's Thesis**

Independent original research project supervised and evaluated by a thesis committee. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max hours: 6 Credits. **Semester Hours:** 3 to 6

### **CRJU 8840 - Independent Study**

Affords the student the opportunity to pursue creative research activities under the individual supervision of a full-time faculty member. No more than six semester hours of credit for independent study may be applied toward the PhD degree. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **CRJU 8990 - Doctoral Dissertation**

Upon admittance to candidacy, students must be continuously registered for dissertation credit each fall and spring semester or be automatically dropped from the program. Students must register for 7.0 credit hours per semester. In cases where students will not be using any university resources during a particular semester, they may petition the PhD director to register for only 3.0 credit hours to maintain continuous enrollment. Students must be registered for dissertation credit during the semester they have a colloquium or defense. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max hours: 10 Credits. **Semester Hours:** 1 to 10

### **Cultrly & Lingstcly Dvrse Educ**

#### **CLDE 1000 - Language, Identity, & Power: International Perspectives**

This course explores the relationship between language, identity, and power in various international contexts. The course considers how legacies of inequality for particular communities are reflected in societal attitudes about languages and language users and subsequent language planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **CLDE 1030 - Introduction Language Development of Multilingual Learners**

This course provides an overview of how languages are learned and used in day-to-day life. It focuses on the complexities and variations in registers, dialects and languages as an essential part of human communication in the context of power and privilege in the larger society. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 3840 - Independent Study in CLDE**

Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **CLDE 4020 - Responsive Classroom Communities**

This course investigates how people learn and the implications of social and cultural learning for establishing engaging and culturally responsive learning communities. Through this course teacher candidates will better understand their roles in student learning and how their own cultural lenses impact their relationships with students and families, and influence student success in the classroom. Cross-listed with CLDE 5020. Prereq: EDFN 4010. Restriction: Restricted to students in Education and Human Development with between 27 and 180 cumulative credit hours or students in the Education Minor EDST-MIN or CLAS secondary students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5010 - Foundations of Language & Culture in Education**

Designed for veteran and novice teachers to gain an understanding of schooling and language education. Participants examine key social theories based on the writings of important scholars in the field, on topics such as the politics of race, schooling, language, and cultural identity. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5020 - Responsive Classroom Communities**

This course investigates how people learn and the implications of social and cultural learning for establishing engaging and culturally responsive learning communities. Through this course teacher candidates will better understand their roles in student learning and how their own cultural lenses impact their relationships with students and families, and influence student success in the classroom. Cross-listed with CLDE 4020. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5030 - Language Development of Multilingual Learners: Advanced**

This course offers a deep investigation of the relationship between language and literacy acquisition. In the context of first and second language development across the lifespan, the course focuses on bilingual and second language development, and on the acquisition of literacy by young children. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5032 - English Linguistic Foundations for SLA & TESOL**

Investigates Second Language Acquisition (SLA) theories and new developments in the field relevant to adult learners of English, factors that influence outcomes, and key structures in English grammar and pronunciation. Lab time with ESL learners involves teaching listening/speaking and applying grammar in writing. Max hour: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5035 - Connecting Multilingual Theories to Practice**

This course supports students in synthesizing research and theory on learning and multilingual development, and identifying their own theoretical orientation in the field. There is a specific emphasis on connecting classroom practice to their theoretical stance. Prereq: CLDE 5030. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5042 - Techniques for Teaching Adult ESL**

This course provides principles of language assessment and progress monitoring strategies for teachers of adult ESL learners to help inform their practices and decisions related to appropriate instruction and placement of, and programming for, learners. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5050 - Assessment & Advocacy for Multilingual Learners**

Students learn to gather and use assessment results within a strengths-based framework to advocate for appropriate programming, placement, instruction, and ongoing progress monitoring of multilingual students. Special attention is paid to linguistic and cultural bias in the field of assessment. Cross-listed with SPED 5050. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5070 - Linguistic Analysis of English**

A descriptive linguistic approach to English grammar with a functionalist view of language and discourse processing. The course examines the historical evolution of English from its origins and the impact this has had on its grammar and syntax. A critical applied linguistic perspective is included focusing on language variation and status. Provides a framework for understanding, identifying and describing the major features of English (in particular) and language (in general). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5140 - Language, Culture & Educational Equity**

Develops an understanding of the pluralistic and intersectional nature of U.S. society (race, class, gender, sexuality, language, migration status), and the role of the school within this social context. Examines the legal and cultural history of language education in Colorado and the U.S. as well as the impact of changing demographics on schools. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5160 - History & Law of Bilingual & Immigrant Education**

This course includes an overview of U.S. and Colorado history and legislation related to bilingual education and second language education, as well as current and historical immigration issues as they impact students, families, communities, schools, and educators. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **CLDE 5170 - Race, Class and Culture in Public Schools**

This course will focus on understanding culture and diversity, recognizing the role of inherited power and privilege in both individual and institutional interactions and developing a philosophy of social justice and equity in education. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5190 - Culturally Responsive Pedagogy and Practices**

This course focuses on developing practical tools for culturally responsive, inclusive instructional strategies, classroom management and curriculum and lesson planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5430 - Gender as Culture**

Examines ways some implicit conceptual and value systems regarding gender are manifested in schools, homes and work places. Provides students with knowledge and insight from interdisciplinary scholarship of gender in society. Cross-listed with CLDE 7430. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5800 - Language Variation & Implications for Teaching**

Provides an introduction to the field of educational sociolinguistics and research of classroom discourse. Students are introduced to the collection and analysis of oral and written language in educational contexts. Basic concepts and key issues regarding the form-function relationships of language use in instructional settings are discussed. Cross-listed with CLDE 7800. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5810 - Literacy for Bilingual Learners offered for Student Teacher Residency (STR)**

This course, for residents in the STR program, highlights the best practices for language and literacy development for culturally and linguistically diverse learners, including bilinguals, multilinguals, and speakers of non-standard varieties of English. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **CLDE 5820 - Teaching Multilingual Learners, Advanced**

This course focuses on the hands-on practical application of methods and techniques that support language, academic and identity development for bilingual learners. Course work includes critical perspectives on teaching techniques, investigations into the research on teaching techniques in multilingual education, as well as an emphasis on teachers taking leadership in the field of CLDE. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5824 - Theories and Methods of Bilingual Education**

Prereq: Take at least one of the Spanish department courses that are also part of the Bilingual Specialist endorsement. These are: SPAN 5020, 5060, 5076, 5080, 5099, and 5980. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5825 - Methods of Content Teaching for Bilingual Learners**

Provides an in-depth study of curriculum options for learners developing English in schools. Participants examine and apply strategies and materials for developing linguistic and academic capabilities of language learners, with optional extensions for bilingual program educators. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5830 - STR Culminating Experience**

This class provides support for students in the CLDE district-based teacher residency. Students create summaries of their year-long learning and reflect upon artifacts that show their learning in relation to the state standards in Culturally and Linguistically Diverse Education. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 5835 - Special Topics: Literacy for Bilingual Learners**

"This course prepares teachers to meet the specific language and literacy needs of bilingual learners. Students design literacy blocks and content lessons to engage and elevate the literacy of the diverse learners in their classrooms. This class is designed for CLDE endorsement district-based cohorts. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 0.5 to 3

### **CLDE 5840 - Independent Study: CLDE**

Repeatable. Max Hours: 4 Credits. **Semester Hours:** 1 to 4

### **CLDE 5850 - Culminating Experience: Bilingual Specialist**

In this capstone, students compose a 3-5 minute video, plus provide artifacts from teaching and coursework with explanations of how these artifacts show mastery of CDE Standards 8.23 for Bilingual Education Specialist competencies. Prereq: Completion of CLDE endorsement AND 9 units in Bilingual Specialist pathway CLDE 5824, SPAN 5020, SPAN 5060, SPAN 5076, SPAN 5080, SPAN 5099, and 5980. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **CLDE 5910 - Improving Student Outcomes: Interdisciplinary Inquiry**

This course operates from three distinct disciplinary perspectives: urban planning (community and schools), education (quality teaching), and public policy (accountability). Students explore important factors related to improving K-12 student outcomes: resources, leadership, teaching and parent/community involvement from three disciplinary perspectives. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **CLDE 5920 - Immigration through Children's Literature**

This class explores themes of immigration and multilingualism by examining children's and young adult literature. Combines techniques for teaching literacy in multilingual environments with foundational themes in the study of immigration and multilingualism. Max hours: 3

Credits. **Semester Hours:** 3 to 3

### **CLDE 6912 - Teacher Inquiry in Multilingual Classrooms**

This seminar provides opportunities for advanced students in the M.A. program to apply an inquiry lens to the concepts of CLDE. Students design an inquiry project, where they focus on a problem of practice, create an action research question, collect student work as data, and analyze findings and results. Students work in research teams, providing feedback and observing each other's classrooms. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 6950 - Master's Thesis**

This class provides the opportunity for CLDE MA students to complete a Masters' thesis in place of the CLDE Culminating Experience. This class is open to students with advisor support and approval. Max hours: 4 credits **Semester Hours:** 4 to 4

### **CLDE 7090 - Research Seminar**

An advanced course which focuses on specific issues in language, language acquisition and language teaching. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 7210 - Introduction to Leadership for Latin@ Learners**

In this introductory module, students will move beyond typical discussions of leadership that are neutral with regards to the students and families being served to one that puts linguistic and cultural diversity at the center of the discussion. Students will first survey the current state of Latin@s in education and communities from a local and national perspective. We will then co-construct a set of broad questions and examine theoretical frameworks that set the stage for the remaining courses in the program. Max hours: 1 Credit. **Semester Hours:** 1 to 1



### **CLDE 7220 - Legal And Policy Foundations For Latin@ Students**

This course is a comprehensive survey of the highlights and lowlights of federal, state, and local history, legislation and policy regarding the education and rights to education and language for Latin@ students. The readings and discussion are around various ideologies, philosophies, and theoretical underpinnings of education. In this class you will develop skills in critical consideration of the rights of all in US society and the responsibilities of the public institution of schools. As the performance assessment for this course you will have an opportunity to focus on a Colorado school district, community or community organization of your choosing. You will outline history, legislation, and policy for that site. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **CLDE 7230 - Language and Literacy in Bilingual Learners**

This course focuses on first and second language acquisition, and its impact on literacy in young children, elementary and secondary students, and students with special needs. Topics are literacy and language development, assessment, culturally responsive teaching, and school reform policies. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 7250 - Systems, Policy, and Advocacy in Latin@ Communities**

This hybrid, 2-credit module introduces participants to methods of policy research and analysis across levels (federal, state, local) and the historical contexts behind key policies. Participants apply studied forms of policy analysis to investigate and engage with policies affecting their communities. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **CLDE 7260 - Synthesizing Research in Latin@ Learners and Community**

In this final module, students will revisit the theoretical frameworks and research questions they have examined throughout their coursework and: a) identify a problem of practice and research questions they wish to explore in greater depth; b) identify theoretical framework(s) that will guide your research; and, d) develop a comprehensive literature review. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **CLDE 7410 - Communication & Control: Systemic Change**

Examines educational settings -- classrooms, schools, school districts, corporate and clinical settings, church basements and community centers -- as systems, and explores strategies for change. Participants draw on interdisciplinary perspectives of individual and group behavior as they develop personal theories of change and apply these to their own situations. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 7430 - Gender as Culture**

Examines ways some implicit conceptual and value systems regarding gender are manifested in schools, homes and work places. Provides students with knowledge and insight from interdisciplinary scholarship of gender in society. Cross-listed with CLDE 5430. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 7713 - Introduction to Language Policy**

The legal, ideological, and historic foundations of language policies are examined. Also examined are connections with related topics such as language rights, language and power, and issues from the sociology of language, such as language loyalty. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **CLDE 7800 - Language Variation & Implications for Teaching**

Provides an introduction to the field of educational sociolinguistics and research of classroom discourse. Students are introduced to the collection and analysis of oral and written language in educational contexts. Basic concepts and key issues regarding the form-function relationships of language use in instructional settings are discussed. Cross-listed with CLDE 5800. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **CLDE 7840 - Independent Study: CLDE**

Repeatable. Max Hours: 4 Credits. **Semester Hours:** 1 to 4

## **Decision Sciences For Business**

### **DSCI 3780 - Supply Chain Management**

Over the last decade businesses have started to understand how the design and operation of their supplier network can be a source of competitive advantage. Supply chain management is concerned with the activities around communication, managing inventory, warehousing, transportation and facility location. The course objectives are to understand a supply chain/network from the strategic, planning and operations perspectives and to develop skills that allow you to analyze the responsiveness and effectiveness of the network. Prereq: DSCI 2010. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **DSCI 6440 - Quality and Process Improvement**

Studies the identification, measurement and improvement of quality and the practical management issues related to implementing quality systems within organizations. Topics include historic and contemporary views of quality, statistical quality control tools including Six SigmaSM, work design and measurement and process flow and design. Prereq: BUSN 6530 with a grade of "C" or better . Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **DSCI 6822 - Services Operations**

Examines the unique issues involved in the management of service operations. Operations management principles specific to service industries are given in-depth. In addition, simulation is introduced as a technique for studying service industries. Prereq: BUSN 6530 or permission of instructor. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Design & Planning**

### **DSPL 7011 - Research Design**

Students are provided with a 'hands on' understanding of methodological issues to become both intelligent consumers of social science research and competent producers of empirically based knowledge. The course moves through the research process covering hypothesis formulation, research design, data collection, measurement, and some fundamentals of statistical inference. Prereq: Admission to the PhD program in Design and Planning or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **DSPL 7012 - Theories of Planning**

Examines theories of planning and problems of plan implementation. Review and assesses a range of theories of intervention - market imperfections, political economy, regulations, community, rationality, and communication - relying on examples from students research as well as case studies developed by students. Prereq: Admission to the PhD program in Design and Planning or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **DSPL 7013 - Environment and Behavior**

Explores contributions of social research to understanding what facilitates and motivates people's adoption of sustainable environmental behaviors. It examines personal and collective behaviors, at scales that range from buildings to global environmental change, in the developed and developing world. Prereq: Admission to the PhD program in Design and Planning or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **DSPL 7014 - Colloquium**

Presentations of research projects by students, college faculty members and visitors. Repeatable. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **DSPL 7015 - Historiography and Architecture**

Advanced seminar concerning the study of the written record of the past and how it is established. Readings focus on canonic texts formative to the discipline and the strategies they

offer for historical research. Prereq: "Course is offered to doctoral students but masters students may enroll with instructor approval." Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **DSPL 7016 - Architecture, in Theory**

Explores theories and texts that have influenced the analysis and the production of architectural form. The focus is on the expressive potential of architectural forms and the modalities of the realization of this potential. Prereq: "Course is offered to doctoral students but masters students may enroll with instructor approval." Cross-listed with ARCH 6254. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **DSPL 7017 - Pro-Seminar**

Advanced, graduate-level course (seminar, independent-study, or other) addressing the history of architecture, landscape, or urbanism. Prereq: "Course is offered to doctoral students but masters students may enroll with instructor approval." Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **DSPL 7686 - Special Topics in Design and Planning**

Various topical areas in design and planning are studied, including those in history, theory, methods, and practice. Repeatable. Max Hours: 18 Credits. **Semester Hours:** 1 to 3

### **DSPL 7810 - Independent Study: DSPL**

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to design and planning. Prereq: Permission of instructor. Repeatable. Max Hours: 16 Credits. **Semester Hours:** 1 to 3

### **DSPL 7950 - Doctoral Thesis Research**

Conducting research for doctoral dissertation, including data collection, analysis and presentation of findings. Prereq: Completion of core of PhD program. Repeatable. Max hours: 30 Credits. **Semester Hours:** 1 to 10

## **Digital Animation**

### **DACD 2810 - DAC: Surface Modeling**

A lecture/lab course focused on the mastery of creating surface models for digital 3D content. Students will develop skills/knowledge about the processes and techniques for building complex 3D objects with an emphasis on artistic excellence through application of current 3D technologies. Prereq: FINE 1810, FINE 1820, Acceptance into DAC. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **DACD 2820 - DAC: Texturing and Shading**

A lecture/lab course focused on mastery of creating surface textures/materials for digital 3D content. Students will develop skills/knowledge about the processes and techniques for creating realistic textures and materials with an emphasis on artistic excellence through application of current 3D technologies. Prereq: FINE 1810, FINE 1820, Acceptance into DAC. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **DACD 2830 - DAC: Lighting and Rendering**

A lecture/lab course focused on mastery of lighting the digital 3D environment. Students will develop skills/knowledge about the processes and techniques for creating realistic 3D lighting/lighting effects with an emphasis on artistic excellence through application of current 3D technologies. Prereq: DACD 2810, DACD 2820, Acceptance into DAC. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **DACD 2850 - DAC: Character Creation**

A lecture/lab course focused on mastery of skills for creating digital 3D characters. Students will develop skills/knowledge to shape, mold, transform/articulate, and deform digital 3D shapes. Focus will be on creating digital characters, with an emphasis on artistic excellence through application of current 3D technologies. Prereq: DACD 2810, DACD 2820, Acceptance into DAC. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **DACD 3810 - DAC: Environment Production**

A mid-program capstone studio course focuses on developing a project from preproduction through final product using a standard production pipeline model within a collaborative work environment. Students will design and create high-production value CG set/environments utilizing current 3D technologies. Prereq: DACD 2830, DACD 2850, Acceptance into DAC. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **DACD 3820 - Character Rigging & Animation**

A studio course focused on foundational skills for animating digital 3D objects/characters. Students explore the process/techniques of key frame/pose-to-pose animating considering character performance, thought, constraints and velocity with an emphasis on artistic excellence through applications of current 3D technologies. Prereq: DACD 2830, DACD 2850, Acceptance into DAC. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **DACD 3821 - DAC: VFX Rigging & Animation I**

A studio course focused on foundational skills for animating and rigging full digital 3D characters. Students explore the process/techniques of rigging for motion capture characters

and adjusting their performance with consideration for thought, and animation with an emphasis on realistic VFX driven character performance. Prereq: DACD 2830, DACD 2850, Acceptance into DAC. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **DACD 3830 - Advanced Character Animation**

A studio course focused on mastery of skills for rigging and animating digital 3D characters. Students explore the processes/techniques of animation rigging and its relationship to animating character performances. Prereq: DACD 3820, Acceptance into DAC. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **DACD 3831 - Character FX**

A studio course focused on mastery of skills for rigging and animating digital 3D characters and objects and advance motion capture techniques. Students explore the processes/techniques of animation rigging and its relationship to realistic simulation of dynamic objects. Prereq: DACD 3820 and acceptance into DAC (FINE-BFA ANI). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **DACD 3835 - DAC: Visual Effects**

A lecture/lab course exploring the theory/techniques of creating visual effects sequences. Students explore how to develop complete effects shots, including shooting live plates, camera tracking, visual effects, and compositing, with an emphasis on artistic excellence through application of current 3D technologies. Prereq: DACD 2830, DACD 2850, Acceptance into DAC. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **DACD 3846 - DAC: Preproduction for LookDev**

A seminar course focused on the development and preproduction phases for the DAC senior thesis short. The principle focus of the course will be look, lighting, effects, and pipeline development and production organization for the DAC thesis short film. Prereq: DACD 2830, DACD 2850, Acceptance into DAC. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **DACD 3850 - DAC: Dynamic Simulation**

A lecture/lab course exploring the theory/techniques of dynamic and particle simulations for 3D content. Students explore how to develop effects (smoke, fire, steam, explosions) and dynamic materials (cloth), with an emphasis on artistic excellence through application of current 3D technologies. Prereq: DACD 2830, DACD 2850, Acceptance into DAC. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **DACD 4810 - DAC: Production I**

The first semester of a year-long capstone focuses on production of the BFA thesis short. As a team, students assemble to organize, produce and complete a high-production value animated short and student "demo reel" with real-world production pipeline. Prereq: DACD 3845 or DACD 3846, Acceptance into DAC. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **DACD 4820 - DAC: Production II**

The second semester of a year-long capstone focuses on production of the BFA thesis short. As a team, students assemble to organize, produce and complete a high-production value animated short and student "demo reel" with real-world production pipeline. Prereq: DACD 3845 or DACD 3846, Acceptance into DAC. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **Doctoral Studies in Educ Prog**

#### **DSEP 6000 - Academic Writing for Doctoral Students**

Tailored for graduate students in education. Focuses on techniques for improving academic writing, particularly planning, organizing, drafting, revising, and editing papers, i.e. course assignments, portfolio products, doctoral proposals or dissertation chapters. Prereq: Admission to doctoral program. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 1

#### **DSEP 6010 - APA Conventions in Academic Writing**

This workshop, specifically directed to doctoral students, concentrates on practical issues involved in documenting sources and following conventions for other text features using the current Publication Manual of the American Psychological Association and updates posted on the APA Web site. Prereq: Admission to the doctoral program. Max hours: 1 Credit. **Semester Hours:** 1 to 1

#### **DSEP 6020 - Advanced Academic Writing for Doctoral Students**

This workshop is designed for doctoral students in education. Focuses on practical strategies for managing, organizing, revising and editing academic papers, especially complex writing projects such as dissertation proposals and dissertation chapters. Prereq: DSEP 6000 or permission of instructor. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 1

#### **DSEP 7830 - Special Topics**

Special topics that reflect current research and scholarly exploration of leadership and innovation. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

#### **DSEP 7840 - Independent Study: DSEP**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 4

## **DSEP 8990 - Doctoral Research Project Seminar**

Doctoral Research Project coursework toward the completion of an EdD degree in Education. Max hours: 10 Credits. **Semester Hours:** 1 to 10

## **DSEP 8994 - Doctoral Dissertation**

Doctoral dissertation coursework toward the completion of a EdD or PhD degree in Education. Repeatable. Max hours: 30 Credits. **Semester Hours:** 1 to 10

## **Early Childhood Education**

### **ECED 1000 - Introduction to Early Childhood Education**

This course provides an overview of early childhood education contexts and the historical roots of services to young children and families. Trends, resources, foundational standards of practice, professionalism and code of ethical conduct are examined. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ECED 1202 - Child Guidance**

This course explores and applies classroom strategies to promote social competence, build classroom community and facilitate emotional regulation. An emphasis is on understanding development within group contexts, observing children's behavior and engaging with families to make decisions about learning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 2000 - Early Childhood Education as a Profession**

This course provides an overview of the ECE profession and its philosophical and historical foundations. Trends in early childhood care and education and professionalism are examined. Topics include developmental domains and appropriate practices, curriculum models, guidance strategies, family and community relationships, diversity and inclusion, and leadership skills to support quality early care and education work settings. Restriction: Restricted to students in Education and Human Development with between 27 and 180 cumulative credit hours. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 2930 - Infant & Toddler Field Experience & Seminar**

ECED 2930 is designed to support teacher candidates in making theory-to-practice connections, focused on understanding infant and toddler development. Students will spend one day per week in an infant-toddler classroom and engage in a weekly seminar to mediate learning. Prereq or coreq: ECED 4070. Restriction: Restricted to students in Education and Human Development with between 27 and 180 cumulative credit hours. Max hours: 3 Credits.

**Semester Hours:** 3 to 3



### **ECED 4010 - Inquiry and the Disciplines**

This course introduces students to the role, value and practices of inquiry in early childhood education and explores the integration of the visual arts and creative expression with the disciplines of mathematics, literacy, science, social studies, as well as young children's approaches to learning. Restriction: Professional Year Admission required for licensure students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 4020 - Science for P-2 Classrooms**

Focuses on teaching science in preschool, kindergarten and primary grades, including knowledge of state and district science content standards, process standards, assessment, effective instructional strategies, evidence-based practice for adapting the curriculum for diverse learners, and appropriate use of materials. Restriction: Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 4030 - Nutrition, Health, and Safety**

This course focuses on nutrition, health, and safety as a key factor for optimal growth and development of young children. Content includes nutrient knowledge, menu planning, food program participation, health practices, management and safety, appropriate classroom activities and communication with families. Restriction: Restricted to students in Education and Human Development with between 27 and 180 cumulative credit hours. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 4040 - Administrative Seminar**

Emphasizes topics required of administrators to effectively lead and manage early childhood inclusive classrooms or other related programs including leadership capacity, professionalism, administration, teaming/collaboration, communities of practice, staff management, safety, and professional development. Cross-listed with ECED 5040. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 4050 - Early Childhood Education Capstone: Planning, Instruction & Assessment**

This is the second course in this two-course sequence where students examine the essential features of instructional and curriculum design of developmentally appropriate and culturally sustaining inquiry based learning experiences, implementation, and assessment in the teaching and learning of young children. Prereq: ECED 4010. Restriction: Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 4060 - Working with Families, Professionals, and Communities**

The focus of this course is on the human relations component of an early childhood professional's responsibilities. Course content includes family-centered practice, culturally-responsive practices, home-school partnerships, staff development and communication, collaborative teaming and community interaction. Restriction: Restricted to students in Education and Human Development with between 27 and 180 cumulative credit hours. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 4070 - Development and Education of Infant and Toddlers**

Focuses on the growth and development of infants and toddlers; responsive caregiving practices; observing development; relationship-based approach to curriculum and guidance; health, safety, and nutrition issues. Investigates state requirements for licensed infant/toddler homes and centers and accreditation and quality standards. Prereq or coreq: ECED 2930. Restriction: Restricted to students in Education and Human Development with between 27 and 180 cumulative credit hours. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 4102 - Developmentally Appropriate Curriculum Methods and Techniques**

Overview of early childhood curriculum development including processes for planning and implementing developmentally appropriate environments, materials, and experiences. Examines curriculum models and approaches for promoting development and learning in all developmental domains. Evidence-based practices for assessing young children. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 4200 - Assessment for Early Childhood Classrooms**

This course reviews observation/assessment of young children—purpose, tools, and methods for children birth-age 8. Defines measurable outcomes, progress monitoring and use of assessment data to improve early intervention, curriculum planning, intentional teaching, instructional design, and monitor child outcomes. Restriction: Restricted to students in Education and Human Development with between 57 and 180 cumulative credit hours. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 4202 - Child Guidance and Classroom Community**

This course presents evidence-based classroom strategies to promote social competence, build classroom community and reduce or prevent behavior problems. Emphasis is placed on understanding child development and observing behavior to make decisions for children ages birth through age 8. Restriction: Restricted to students in Education and Human Development with between 57 and 180 cumulative credit hours. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 4300 - Exceptional Learners in the Early Childhood Classroom**

Educating young children with disabilities in the early childhood setting: typical and atypical development, theoretical models, policy and legal requirements, evidence based research related to instructional design, intervention/curriculum planning and implementation. Introduction to embedded instruction and inclusive environments. Restriction: Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 4410 - Coaching for Early Childhood Professionals: Foundations**

The Foundations course focuses on learning, understanding and using relationship and evidence-based coaching skills in early childhood settings. Students will practice the fundamentals of coaching using a systematic, individualized, reflective approach and sharing experiences with others in the course. Cross-listed with ECED 5410. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 4420 - Coaching Early Childhood Professionals: Awareness**

The Awareness course focuses on increasing coaches' skills at introspection, thoughtful planning, intentional application of coaching knowledge and skills, and continuous improvement. Students will integrate skills with effective application in class and real life coaching experiences, managing progress and accountability. Cross-listed with ECED 5420. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 4430 - Coaching for Early Childhood Professionals: Attuning**

The Attuning course will integrate skills from the Foundations and Awareness courses to complete the EC Coaching Certificate. Students practice refining and altering coaching based on needs and readiness. Students learn sustainable organizational change that embed coaching in all professional practice. Cross-listed with ECED 5430. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 4650 - Dual Language Learners Learning and Development**

The course will review current research on the learning and development of young dual language learners (birth through 8) and the classroom environments and instruction that can promote their learning. The course uses a socio-cultural framework to view children's learning. Cross-listed with ECED 5650. Restriction: Restricted to students in Education and Human Development with between 57 and 180 cumulative credit hours. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 4800 - Workshop: Topics in Early Childhood Education**

Topics and credit hours vary from semester to semester. Cross-listed with ECED 5800. Repeatable. Max hours:12 Credits. **Semester Hours:** 1 to 4

### **ECED 4931 - Internship I & Collaborative Learning Community**

ECED 4931 is the first of 3 internships in the professional year of the ECE program plan that provides the necessary learning opportunities for candidates to gradually develop their practice in order to be licensed as an early childhood educator. Restriction: Professional Year Admission required. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **ECED 4932 - Internship II & Collaborative Learning Community**

ECED 4932 is the second of 3 internships in the professional year of the ECE program plan that provides the necessary learning opportunities for candidates to gradually develop their practice in order to be licensed as an early childhood educator. Restriction: Professional Year Admission required. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **ECED 4933 - Internship III & Collaborative Learning Community**

ECED 4933 is the final internship in a series of three completed during the professional year of the ECE program plan that provides the necessary learning opportunities for candidates to gradually develop their practice to be licensed as an early childhood educator. Cross-listed with ECED 5933. Restriction: Professional Year Admission required. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 2 to 8

### **ECED 4934 - Extended Internship & Collaborative Learning Community**

ECED 4934 is an extended internship that supports students who need extended time in an internship in order to complete their ECE program and fully develop their practice in order to be licensed as an early childhood educator. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 4 to 8

### **ECED 5010 - Curriculum in Early Childhood Education**

Review of principles of early childhood curriculum and program development. Linkages are made between theoretical bases of development and curriculum planning. Curriculum areas considered include language and literacy, mathematics, motor, social-emotional, science, social studies and aesthetic development. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **ECED 5040 - Administrative Seminar**

Emphasizes topics required of administrators to effectively lead and manage early childhood inclusive classrooms or other related programs including leadership capacity, professionalism, administration, teaming/collaboration, communities of practice, staff management, safety, and professional development. Cross-listed with ECED 4040. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **ECED 5060 - Working with Families and Communities**

Theories, practices and research related to working with families and communities. Topics include: social systems perspective, family structures and forms; family support systems; family-centered practice; family/professional partnerships; effective communication; and working with parents of children with special needs. Repeatable. Max Hours: 6 Credits.

**Semester Hours:** 3 to 3

### **ECED 5070 - Social Competence and Classroom Supports**

Emphasizes prevention, positive behavioral interventions and support, and social/emotional development for children birth to eight. Focus on the practical application of intervention strategies based on current research and evidence-based practices. Cross-listed with ECED 7070. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 5080 - Language and Literacy in Young Children**

Overview of theories and research in early language and literacy development. Emphasis on sociocultural beliefs and practices associated with the use of language and literacy in the different contexts. Information about language disorders found in early childhood settings is discussed. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **ECED 5091 - Educators as Social Change Agents**

Focus on developing knowledge, skills and dispositions to advance equity and social justice in classrooms, programs, and communities to activate educators as social change agents and implement quality inclusive practices for young children from diverse backgrounds. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 5102 - Introduction to Developmentally Appropriate Curriculum**

Introduces developmentally appropriate curriculum and instructional practices in early education and the elementary grades. Subject areas considered include literacy, language arts; mathematics, computers, blocks; science, outdoor education; social studies, thematic units; and art, drama, music, physical activity. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **ECED 5104 - Advanced Developmentally Appropriate Curriculum**

Extends earlier learning about developmentally appropriate curriculum and instructional practices in early education and the elementary grades. Students elaborate their knowledge of subject area materials and activities. A curriculum unit that is developmentally appropriate is planned, implemented and evaluated. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 1 to 3

### **ECED 5110 - Advanced Infant and Toddler Development:**

Focuses on development of infants/toddlers to inform responsive caregiving practices. Develop observation skills to understand infant/toddler behavior. A relationship-based approach to curriculum is emphasized. State requirements for licensed infant/toddler programs, accreditation and quality standards are discussed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 5200 - Screening and Assessment of Young Children**

Provides knowledge and field-based experience in the administration and scoring of screening and assessment for infants, toddlers, and preschool children. Understand and administer a variety of formal and informal measures including screening, evaluation, play-based and curriculum-based assessments. Cross-listed with ECED 7500. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **ECED 5202 - Classroom Management to Promote Positive Behavior**

Evidence-based classroom management strategies to promote social competence and reduce behavior problems. Includes strategies for responding to challenging behavior and developing individualized behavior support plans. Explores factors that influence the lives of young children including family disruption, stress, violence and trauma. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **ECED 5210 - Overview of Infant Toddler Autism Services**

This course will provide students with a general introduction to the legal and procedural elements that characterize state-of-the-art services to infants and toddlers with ASD. The course will review the Federal mandate for services, principles of practice, and evidence-based teaching strategies for children with autism. Must be accepted into the Infant Toddler Autism Certificate Program. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 5211 - Applied Treatment Delivery for Infants and Toddlers with ASD**

The course explores current treatment methods and philosophies for young children with Autism Spectrum Disorder (ASD). Common intervention approaches are reviewed, with discussion of the evidence base of each. Intervention goals covered address language, play/socialization, early adaptive skills, and positive behavior. Must be accepted into the Infant Toddler Autism Certificate Program. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 5212 - Coaching for Families Infants/Toddlers w/ Autism**

This course provides the knowledge and skills necessary to implement recommended, evidence-based practices with families of infants and toddlers with or at risk for ASD. The

course will review current evidence based strategies for supporting families, collaborating with families, and using evidence-based family coaching strategies. Must be accepted into the Infant Toddler Autism Certificate Program Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 5301 - Child Development: Theory to Leadership Practices**

This course will provide an introduction to theories of child development from an interdisciplinary perspective. It examines development in the cognitive and socioemotional domains utilizing biological, social, psychological and anthropological perspectives and how theory is used to shape program models. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 5311 - Equity for Leadership in Early Childhood Programs**

This course is designed to provide early childhood leaders with an understanding of the equity issues present in early childhood systems and how these issues are reflected in individual identities and programs. Theories from the academic community will be used to facilitate student growth in understanding how these issues interact with them at a personal, professional and leadership level. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 5312 - Leading Learning Organizations**

This course will deepen student's capacity to lead effectively and learn how to create an adaptive, flexible learning organization well positioned for delivering effective and sustainable programs and services on behalf of young children and families. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 5320 - Community-Based Action Research: Capstone**

This course is designed to foster the leader's appreciation, skills, and practice as a participatory action researcher. Students will learn these concepts by leading a participatory action-research project in their community around a challenging early childhood issue and will present their action research project culminating at a Capstone Celebration. Prereq: Must be admitted to the Buell Early Childhood Leadership Program (BECLP). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 5330 - Introduction to Transformational Leadership**

This course outlines the evolution of leadership theory over the past half-century and immerses students in an exploration of the values, leadership capacities, and practices that define transformational leadership as they apply to effecting change to support the success and well-being of young children and their families and communities. Prereq: Must be admitted to the Buell Early Childhood Leadership Program (BECLP). Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECED 5350 - Policy and Advocacy in Early Childhood**

This course provides the historical and political context of early care and education in the United States. Local, state and federal mandates, public laws, and legislative procedures and initiatives will be investigated. Prereq: Must be admitted to the Buell Early Childhood Leadership Program (BECLP). Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECED 5410 - Coaching for Early Childhood Professionals: Foundations**

The Foundations course focuses on learning, understanding and using relationship and evidence-based coaching skills in early childhood settings. Students will practice the fundamentals of coaching using a systematic, individualized, reflective approach and sharing experiences with others in the course. Cross-listed with ECED 4410. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECED 5420 - Coaching Early Childhood Professionals: Awareness**

The Awareness course focuses on increasing coaches' skills at introspection, thoughtful planning, intentional application of coaching knowledge and skills, and continuous improvement. Students will integrate skills with effective application in class and real life coaching experiences, managing progress and accountability. Cross-listed with ECED 4420. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECED 5430 - Coaching for Early Childhood Professionals: Attuning**

The Attuning course will integrate skills from the Foundations and Awareness courses to complete the EC Coaching Certificate. Students practice refining and altering coaching based on needs and readiness. Students learn sustainable organizational change that embed coaching in all professional practice. Cross-listed with ECED 4430. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECED 5650 - Dual Language Learners Learning and Development**

The course will review current research on the learning and development of young dual language learners (birth through 8) and the classroom environments and instruction that can promote their learning. The course uses a socio-cultural framework to view children's learning. Cross-listed with ECED 4650. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECED 5800 - Workshop: Topics in Early Childhood Education**

Topics and credit hours vary from semester to semester. Cross-listed with ECED 4800. Repeatable. Max hours: 12 Credits. **Semester Hours:** 1 to 4



### **ECED 5840 - Independent Study**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 4

### **ECED 5850 - Capstone in Early Childhood Education**

Capstone is a final project that demonstrates your academic and professional development. It explains professionally who you are, where you have been, how you have developed in ECE. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 5933 - Internship III & Collaborative Learning Community**

ECED 5933 is the final internship in a series of three completed during the professional year of the ECE program plan that provides the necessary learning opportunities for candidates to gradually develop their practice to be licensed as an early childhood educator. Cross-listed with ECED 4933. Repeatable. Max Hours: 8 credits. **Semester Hours:** 2 to 8

### **ECED 6010 - Literacy and Mathematics K-2**

Principles of early reading and mathematical development for grades K-2 including diverse instructional strategies and differentiation for children with disabilities. Linkages are made between child development and learning expectations for mathematics, reading and writing and curriculum planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 6100 - Medical and Physiological Aspects of Development**

Presents medical and physiological aspects of development including an understanding of chronic illness/medical fragility in young children and the effects on families, school, and community. Examination and professional responses to cultural interpretation of medical issues are discussed. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **ECED 6200 - Early Intervention Strategies**

Explores current research, knowledge, and skills related to evidence-based intervention strategies and service delivery in high quality inclusive settings for young children with special needs from infancy through age eight. Cross-listed with ECED 7200. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **ECED 6300 - Contextual Curriculum 1**

This course focuses on the role of the teacher in developing a contextual curriculum that deeply engages learners. Developing curriculum includes observing learners, documenting observations using technology, and reflecting on documentation with colleagues to intentionally implement curriculum plans. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECED 6310 - Contextual Curriculum II**

This course builds upon competencies developed in ECED 6300: Contextual Curriculum I through curriculum development that relies on the cyclical process of critical observation, documentation, analysis, reflection, and provocation. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECED 6330 - Supportive Social Learning**

This course will provide students with the strategies that promote social competence and reduce the potential for interactions and behaviors that often challenge teachers. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECED 6340 - Messing About with STEM**

This course focuses on the role of the teacher in supporting STEM experiences in diverse contexts. Students will draw from relevant research and philosophy of science, combined with inquiry-based experiences guided by established frameworks, to strengthen their STEM mindset. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECED 6350 - Literacy and the Hundred Languages**

In-depth study of scientific and theoretical foundations of communication and literacy development, the conceptual paradigm of 100 languages of children, the nature of languages, and acquisition patterns in contexts of individual variation, cultural and linguistic differences, or language challenges. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECED 6360 - Children and Teachers as Change Agents**

This course focuses on partnering with children and other educators around a community-based action project that will contribute to the community. Students will review literature and documentation, collaborate, design, lead, and advocate around a topic that relates to young children. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECED 6690 - Seminar: Research and Current Issues in Early Childhood Education**

Research methods are reviewed and then selected topics are considered. Emphasis is on research findings and current issues of importance to teachers, administrators, specialists, collaborator/consultants, and researchers in early childhood and early childhood special education. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

## **ECED 6910 - Early Childhood Special Education Infancy Practicum**

Supervised field-based experiences in settings for children with disabilities and at-risk infants, toddlers, and their families. Prereq: ECED 5010, 5070, 5080, 5200, 6100, and 6200. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 4

### **ECED 6911 - Initial Practicum and Field Experience in Early Childhood Education**

In this experience, you will be introduced to an array of skills/practices that support working effectively with young children and families in the context of their local community. You will work within the community to support children's academic/social development. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 4

### **ECED 6912 - Early Childhood Special Education Preschool Practicum**

Supervised field-based experiences in settings for young children with disabilities and their families, including school districts and community agencies. Prereq: ECED 5010, 5070, 5080, 5200, 6100, and 6200. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 4

### **ECED 6914 - Early Childhood Special Education Primary Practicum**

Supervised field-based experiences in kindergarten through second grade settings with typically developing children, children with special needs and special education teams. Prereq: ECED 5010, 5070, 5080, 5200, 6100, and 6200. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 4

### **ECED 7000 - Early Childhood Leadership Seminar I**

The course is designed to provide an overview of policies, laws, and leadership skills in early childhood. Students will study specific policies and laws influencing (1) services for children with severe challenging behavior and autism, (2) children from culturally and linguistically diverse families, and (3) professional development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 7002 - Early Childhood Leadership Seminar II**

The purpose of the course is to provide scholars with leadership knowledge and skills to implement policies, laws, programs, and systems that support the use of evidence-based practices with young children with disabilities. Prereq: ECED 7000. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECED 7004 - Early Childhood Leadership Seminar III**

The purpose of this seminar is to provide the knowledge and skills to implement evidence-based practices in early childhood settings. This seminar will focus on policies and practices that support implementation, scale-up, and sustainability of evidence based practices in early childhood systems. Prereq: ECED 7002. Max hours: 9 Credits. **Semester Hours:** 3 to 3

## **ECED 7070 - Social Competence and Classroom Supports**

Emphasizes prevention, positive behavioral interventions and support, and social/emotional development for children birth to eight. Focus on the practical application of intervention strategies based on current research and evidence-based practices. Cross-listed with ECED 5070. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

## **ECED 7200 - Early Intervention Strategies**

Explores current research, knowledge, and skills related to evidence-based intervention strategies and service delivery in high quality inclusive settings for young children with special needs from infancy through age eight. Cross-listed with ECED 6200. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECED 7500 - Screening and Assessment of Young Children**

Provides knowledge and field-based experience in the administration and scoring of screening and assessment for infants, toddlers, and preschool children. Understand and administer a variety of formal and informal measures including screening, evaluation, play-based and curriculum-based assessments. Cross-listed with ECED 5200. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Economics**

### **ECON 2012 - Principles of Economics: Macroeconomics**

Covers topics of inflation, unemployment, national income, growth and problems of the national economy, stabilization policy, plus others at the discretion of the instructor. Purpose is to teach fundamental principles, to open the field of economics in the way most helpful to further a more detailed study of special problems, and to give those not intending to specialize in the subject an outline of the general principles of economics. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS1. **Semester Hours:** 3 to 3

### **ECON 2022 - Principles of Economics: Microeconomics**

Topics include price determination in a market system composed of households and firms: resource allocation and efficiency of various market structures, plus others at the discretion of the instructor. Note: Complementary to and normally taken following ECON 2012. ECON 2012 is not a prerequisite for ECON 2022. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS1. **Semester Hours:** 3 to 3

### **ECON 3100 - Economics of Race and Gender**

Overview of the determinants of wages, employment and education in the labor market. Emphasizes the investigation of the evidence and theories of differentials that appear to be associated solely with race and sex, and public policies associated with discrimination and poverty. Prereq: ECON 2022 with a C- or higher. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 3366 - Managerial Economics**

Presents the basic core of economic theory and its use for sound managerial decision making. Emphasis on the practical applications of the concepts learned in economics to the resolution of everyday problems. Prereq: ECON 2012 and 2022 with a C- or higher. Term offered: summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 3400 - Economics of Sex and Drugs**

Examines the political and policy issues surrounding controversial topics in human behavior. Economic models and reasoning are applied to examine issues such as juvenile substance use and abuse, and teen pregnancy. Prereq: ECON 2022 with a C- or higher. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 3770 - Issues in Economic Development**

This is a survey course in development economics intended to provide a basic understanding of the economies of developing nations. Topics include issues and policies in economic development, comparative economic growth, demographic change, poverty, inequality, and migration. This course is for non-economics majors & economics minors. Students may not receive credit if they take it after they have completed ECON 4770. Prereq: Econ 2012 or Econ 2022 with a C- or higher. Term offered: spring, summer. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 3801 - Introduction to Mathematical Economics**

Introduces the use of mathematics in micro- and macro-economic analysis. Emphasis on model-building techniques, solution methods, and economic interpretations. Prereq or co-req: ECON 2012 with a C- or higher, prereq: ECON 2022 and College Algebra or higher (MATH 1110 or MATH 1070 or MATH 1401 or MATH 1130 or MATH 2411 or MATH 2421) with a C- or higher. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 3811 - Statistics with Computer Applications**

Introduces statistical methods and their application to quantitative problems in economics and social sciences. Note: Recitation is required. Prereq or co-req: ECON 2022 AND Prereq: College Algebra or higher (MATH 1110, MATH 1070, MATH 1401, MATH 2411, MATH 2421, MATH 1130,

or ECON 3801) with a C- or higher. Term offered: fall, spring. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **ECON 3939 - Internship**

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: Students must have junior standing and at least a 2.75 GPA and must work with Experiential Learning Center advising to complete a course contract and gain approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ECON 4001 - Topics in Economics**

Studies special topics in economics to be selected by the instructor. Note: May be repeated for credit when topics vary. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ECON 4030 - Data Analysis with SAS**

Covers techniques for handling and interpreting economic data and conducting econometric analyses using SAS programming. Provides hands-on data management and analyses with large data sets with applications to business and economics, and prepare students for SAS Base Programmer certification exam. Prereq: ECON 3811 with a C- or higher. Cross-listed with ECON 5030. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4071 - Intermediate Microeconomic Theory**

Production, price and distribution theory. Study of value and distribution theories under conditions of varying market structures, with special references to the contribution of modern theorists. Prereq: ECON 3801 with a C- or higher or Calculus II or Calculus III with a B or higher. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4081 - Intermediate Macroeconomic Theory**

National income and employment theory. Primary emphasis placed on determination of employment and prices. Problems of unemployment and inflation analyzed and appropriate policies considered. Prereq: ECON 3801 with a C- or higher or Calculus II or Calculus III with a B or higher. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4090 - History of Economic Thought**

Traces the development of economic thought from ancient times to the 20th century. Considers the context in which these ideas were developed and their relationship to modern economic thought and contemporary economic problems. Note: Students may not receive credit for this course if they have already received credit for ECON 4091. Prereq: ECON 2012

and ECON 2022 with a C- or higher. Cross-listed with ECON 5090. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4110 - Money and Banking**

Surveys major monetary and fiscal institutions such as commercial banks, the federal reserve system, savings institutions, and the structure of debt. The relationships between households, firms and financial intermediaries are explored, and the tools available to macroeconomic policy makers are described and evaluated. Prereq: ECON 4081 with a C- or higher. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4150 - Economic Forecasting**

Teaches forecasting techniques used in business and government to project trends and short-term fluctuations. Actual data are employed in instruction and labs. State-of-the-art spreadsheet and algorithms are introduced as part of the course work. Prereq: ECON 4811 with a C- or higher. Cross-listed with ECON 5150. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4210 - Public Finance**

Surveys topics dealing with the economics of government activity, including the provision of public goods; the economics of the political process; welfare programs; pollution externalities; benefit-cost analysis; the U.S. tax structure; and the effects of taxes on economic behavior, economic performance and the distribution of income. Prereq: ECON 2022 with a C- or higher. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4318 - Urban Economics**

Why do cities form and why are they so productive? How does the value of land change as the urban landscape develops? How do we address the difficulties that challenge modern cities, such as affordable housing, congestion, and crime? Prereq: ECON 3811 and ECON 4071 with a C- or higher. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4320 - Financial Economics**

This course focuses on the economics of decision-making under conditions of risk and uncertainty. Topics include theories of efficient markets, rational expectations, speculative bubbles, random walks, portfolio analysis, options, derivatives and future markets. Emphasis is on the application of basic theories to economic agents' behavior and case studies. Prereq: ECON 2022 with a C- or higher and ECON 3801 with a C- or higher or (MATH 2411 or MATH 2421 with B or higher), and ECON 3811 with a C- or higher. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4410 - International Trade**

Trade theory identifies who wins and loses from trade and why there are usually overall gains. Explores issues in immigration, globalization, income inequality, tariffs, dumping, the WTO, the environment, wages, and growth strategies among others. Prereq: ECON 3811 with a C- or higher. Cross-listed with ECON 5410. Term offered: fall, spring. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ECON 4420 - International Finance**

The international adjustment process, including the foreign exchange market, balance of payments disequilibria, price and income adjustment, fiscal and monetary policy, and the international monetary system. Prereq: ECON 3811 with a C- or higher. Term offered: spring, fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4430 - Economic Growth**

Explores causes of rapid growth or decline over long periods for different regions of the world. Inequality, sustainability, culture, climate, technology and resources all play significant roles. Data and examples are used to determine the important influences. Prereq: ECON 2022 and ECON 3811 with a C- or higher. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4540 - Environmental Economics**

Economic approach to environmental problems: relationship between ownership structures, externalities and environmental damage; poverty, population pressure, and environmental degradation; valuation of environmental amenities; sustainability of economic activity; cost-benefit analysis applied to the environment; evaluation of alternative instruments for environmental control. Prereq: ECON 2022 with a C- or higher. Cross-listed with ECON 5540. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4550 - Game Theory and Economic Applications**

An introduction to economic applications of game theory. Concepts such as strategic and extensive form games, existence and selection of equilibrium will be covered. These concepts will be applied to understand market structure, location decisions, price competition, contracting, and auctions. Prereq: ECON 4071 with a C- or higher. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4610 - Labor Economics**

Studies problems associated with the determination of wages, hours, and working conditions in the American economy. Strong emphasis placed on current research in such areas as welfare



reform, minimum wage, return to schooling, immigration, labor market discrimination, and trade unions. Prereq: ECON 4811 with a C- or higher. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4640 - Sports Economics**

Applies economic analysis to sports. Explores topics such as competition, on-field performance, players' compensation, profits in professional sports, anti-trust and labor law, the impact of sports on local communities and the links between athletics and education. Prereq: ECON 2022 with a C- or higher. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4660 - Health Economics.**

This course focuses on the analysis of current health care markets. Topics include the production of health, demand for health care, physician and hospital behavior, health insurance, medical malpractice, health externalities, managed care and the affordable care act. Prereq: ECON 3811 and 2022. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4670 - Economics of Population and Growth**

Theoretical modeling and data analysis will be used to analyze the economic causes, consequences and policy responses to population change through changes in fertility, marriage, health, mortality and migration. Prereq: ECON 2022 and (ECON 3811 or ECON 4811) with a C- or higher or instructor approval. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4740 - Industrial Organization**

Examines the determinants of, and linkages between, market structure, firm conduct, and industrial performance. Topics include: determinants of the market size; impact of different market structures on prices and outputs; strategic behavior of firms to prevent entry or induce exit of rival firms; collusion; price discrimination; advertising; competition, monopoly, and innovation; implications for economic efficiency and public policy. Prereq: ECON 4071 with a C- or higher. Cross-listed with ECON 5740. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4770 - Development Economics**

This course provides a theoretical and empirical framework for analyzing economic problems in developing countries focusing on the role of individuals, families and institutions. Topics include poverty traps, human capital accumulation, gender discrimination, microcredit and violent conflict. Prereq: ECON 4811 with a C- or higher. Term offered: fall. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ECON 4811 - Introduction to Econometrics**

Introduces econometric methods and their applications to quantitative economic problems. Simple and multiple regression models and problems encountered in their applications are developed in lectures and applied computer projects. Prereq: ECON 3811 with a C- or higher. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4812 - Advanced Econometric Methods**

This course will focus on econometric methods used to generate causal inference in experimental and non-experimental settings. Topics covered will include the potential outcomes framework, randomized experiments, natural experiments, difference-in-differences, fixed effects, matching, instrumental variables, and regression discontinuity. Prerequisite: ECON 4811 with a C- or higher. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 4840 - Independent Study: ECON**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **ECON 4850 - Honors Independent Study: ECON**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **ECON 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **ECON 5030 - Data Analysis with SAS**

Covers techniques for handling and interpreting economic data and conducting econometric analyses using SAS programming. Provides hands-on data management and analyses with large data sets with applications to business and economics, and prepare students for SAS Base Programmer certification exam. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Statistics with Computer Applications(ECON 3811) or a similar course is strongly recommended as preparation for this course. Cross-listed with ECON 4030. Term offered: fall, spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 5050 - Special Economic Problems**

Provides students the opportunity to critically evaluate some practical and theoretical problems under supervision, and to present results of their thinking to fellow students and instructors for critical evaluation. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4050. Max Hours: 8 Credits. **Semester Hours:** 1 to 8

### **ECON 5073 - Microeconomic Theory**

Fundamental features of partial equilibrium theory of the firm, consumer and market. General equilibrium and welfare economic topics are examined. Features of the models that have empirical applications are accented. Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 5083 - Macroeconomic Theory**

Examines the major macroeconomic models within a common framework. Differences in the foundations, structure, and policy implications of the competing models are analyzed. Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 5090 - History of Economic Thought**

Traces the development of economic thought from ancient times to the 20th century. Considers the context in which these ideas were developed and their relationship to modern economic thought and contemporary economic problems. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Microeconomics (ECON 2022) and Macroeconomics (ECON 2012) or similar coursework is strongly recommended as preparation for this course. Cross-listed with ECON 4090. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECON 5150 - Economic Forecasting**

Teaches forecasting techniques used in business and government to project trends and short-term fluctuations. Actual data are employed in instruction and labs. State-of-the-art spreadsheet and algorithms are introduced as part of the course work. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Statistics with Computer Applications (ECON 3811) or similar coursework is strongly recommended as preparation for this course. Cross-listed with ECON 4150. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECON 5310 - Managerial Economics**

The course adapts standard theory to more realistically discuss enterprise structure, firm and managerial behavioral incentives, and strategic behavior. Once a foundation is laid, successful and unsuccessful strategies and case studies are presented. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4310. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECON 5320 - Financial Economics**

Studies the financial decision making process of individuals and business entities, and the workings of financial institutions. Topics include the essentials of optimal portfolio, financial management, financial innovations, and the globalization of financial markets. Emphasis is on the application of basic theories to economic agents' behavior and the case studies. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECON 5410 - International Trade**

Trade theory identifies who wins and loses from trade and why there are usually overall gains. Explores issues in immigration, globalization, income inequality, tariffs, dumping, the WTO, the environment, wages and growth strategies among others. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4410. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ECON 5530 - Economics of Natural Resources**

Examines economic models of renewable resource management and models of exhaustible resource depletion. Analyzes decisions made by private firms and governments affecting the methods and rate of resource development. Examines the effects of resource development on economic growth and environmental quality and the effects of economic development on

resource scarcity. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4530. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 5540 - Environmental Economics**

Economic approach to environmental problems: relationship between ownership structures, externalities and environmental damage; poverty, population pressure, and environmental degradation; valuation of environmental amenities; sustainability of economic activity; cost-benefit analysis applied to the environment; evaluation of alternative instruments for environmental control. Prerequisite ECON 5073 with a B- or higher. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4540. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 5660 - Health Economics**

Introduces students to analytical skills and economic methods, and demonstrates how these methods can be applied to issues in health policy and management. Topics include: demand for health and medical care; health care costs, health reform, medical technology; market for health insurance; physicians, hospitals, and managed care; pharmaceuticals; regulations in the U.S. health care sector; demand for addictive substances; infant and maternal health; international comparisons of health care systems. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 5740 - Industrial Organization**

Examines the determinants of, and linkages between, market structure, firm conduct, and industrial performance. Topics include: determinants of the market size; impact of different market structures on prices and outputs; strategic behavior of firms to prevent entry or induce exit of rival firms; collusion; price discrimination; advertising; competition, monopoly, and innovation; implications for economic efficiency and public policy. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4740. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 5800 - Special Topics**

Current economics topics to be determined by the instructor. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **ECON 5803 - Mathematical Economics**

Introduces the use of mathematics in advanced micro- and macro-economic analysis. Emphasis on model-building techniques, solution methods, and economic interpretations. Restriction: Students must be admitted to the MA in ECON, MS or PhD in Health Economics in order to enroll ECON 5083. Term offered: fall, spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 5813 - Econometrics I**

Theory and application of statistical techniques used to analyze economic problems. Topics include simple and multiple regression models, simultaneous equation models, and the problems encountered in their application. Students formulate models, obtain data, estimate models, interpret results and, forecast. Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 5823 - Econometrics II**

Second course in the econometrics sequence, covering intermediate topics in cross-section and time series analysis. Topics include limited dependent variables, autoregressive and distributed lag models, longitudinal data analysis and unit roots, co-integration and other time-series topics. Prereq: ECON 5813 with a B- or higher. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 5840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ECON 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **ECON 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes,

to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **ECON 5950 - Master's Thesis**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Max hours: 4 Credits. **Semester Hours:** 1 to 4

### **ECON 6010 - Advanced Microeconomic Theory**

Recent and contemporary literature on fundamentals of economic theory. Consideration of value theory with particular emphasis on methodology, theory of demand, theory of the firm, and theory of distribution. Prereq: ECON 5073 with a B- or better. Restriction: Restricted to students with Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 6020 - Advanced Macroeconomic Theory**

Considers general equilibrium and aggregative analysis in economic theory, with particular emphasis given to the theory of employment, consumption and investment. Prereq: ECON 5083 with a B- or higher. Restriction: Restricted to student with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 6053 - Seminar In Applied Economics**

Familiarizes students with applied research in economics. Students read, discuss, and critique articles in economic journals. Emphasis is placed on research design and methods employed in these articles to prepare students for development of their own research projects in subsequent courses. Topics vary with instructor, and may include international economics, labor economics, monetary theory, public or finance and development economics. Prereq: ECON 5073 and ECON 5813 with a B- or higher. Coreq: ECON 5823. Restriction: Restricted to students with graduate standing. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1.5 to 1.5

### **ECON 6054 - Seminar In Applied Economics II**

Familiarizes students with state-of-the-art applied economic research. Students read, discuss, and critique articles published in economic journals. Note: Topics vary with the instructor. Prereq: ECON 5073 and ECON 5813 with a B- or higher. Coreq: ECON 5823. Restriction: Restricted to students with graduate standing. Term offered: spring. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1.5 to 1.5

### **ECON 6060 - Special Topics**

Special topics in advanced microeconomics. Consideration of value theory based upon methodology, theory of demand, and theory of distribution. Restriction: Restricted to students with Graduate standing. Introduction to Mathematical Economics (ECON 3801) or similar coursework is strongly recommended as preparation for this course. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **ECON 6073 - Research Seminar**

Focuses on training students to do rigorous research in economics. Topics include the analysis of large data sets, further development of econometric skills, and writing a research paper. Note: Students attend lectures and also meet regularly with the instructor in the process of doing a sophisticated research project. ECON 5073 and ECON 5823 with a B- or higher and either ECON 6053 or ECON 6054 with a B- or higher. Restriction: Restricted to students with graduate standing. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 6110 - Money and Central Banking**

Monetary and financial institutions, with focus on relationships among domestic monetary policy, interactional credit and balance of payments. Prereq: ECON 5083 with a B- or higher. Restriction: Restricted to student with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 6210 - Public Finance**

Advanced economic theory applied to the problems of public and private sector decision making. Applied topics in taxation, education, voting theory, welfare economics, externalities and public goods. Prereq: ECON 5073. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 6410 - International Trade**

Contemporary and classical literature on theories of international trade. Topics include the determination of the pattern and terms of trade, the relationship between growth and trade, and commercial policy. Prereq: ECON 5073. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 6420 - International Finance**

Topics in international finance, including exchange rate determination, the adjustment process, international financial markets and the international monetary system. Prereq: ECON 5073. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 6610 - Labor Economics**

Advanced study of the labor market, including: history, nature, and function of labor organizations; the process of wage determination; and the formation of public policy. Prereq:



ECON 5073 and 5813 with a B- or higher. Restriction: Restricted to students with Graduate standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 6666 - The Economics of Health Behaviors**

This course teaches an economic approach to studying health behaviors and the policies that affect them. Special attention will be paid to analyzing the effects of excise taxes and to understanding the quasi experimental approach to doing applied research in economics.

Prereq: ECON 5073 and ECON 5813 with a B- or higher. Restriction: Restricted to students with Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 6770 - Economic Growth and Development**

Considers the role of planning in economic development, with particular reference to investigation of planning problems, especially in less developed countries. Prereq: ECON 5073 and 5803. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 6801 - Advanced Mathematical Economics**

Addresses economic dynamics, formal mathematical modeling in economics, and optimization in economic theory. Prereq: ECON 5803 or permission of instructor. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ECON 6810 - Econometrics and Forecasting**

Covers advanced topics in cross-sectional and time-series analysis. Emphasizes important theoretical and empirical issues encountered in applied work in economics and business. Topics include problems of structural change and model misspecification, instrumental variables, simultaneous equations models, distributed lags, maximum likelihood estimation, qualitative and limited dependent variables, Arima models, vector-autoregressions, issues on exogeneity and causality. Through the use of econometric software programs and actual data, students learn to execute estimation and forecasting projects soundly. Prereq: ECON 5813 and 5823 with a B- or higher. Restriction: Restricted to students with Graduate standing. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ECON 6840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ECON 7073 - Advanced Microeconomic Theory II**

This is a second-semester Ph.D. level course in microeconomics. The first semester course discussed consumer and producer theory: this course will discuss game theory, market equilibrium, and information economics. Prereq: ECON 5073 with a B- or better. Restriction: Restricted to students with Graduate standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 7661 - Health Economics I**

This is the first course in the Ph.D field sequence for Health Economics. The goal of this course is to familiarize you with the basic theory and empirical findings in the part of health economics which focuses on the market for medical care and the policy that surrounds it. Pre-req or co-req ECON 5823. Students must enroll in both courses concurrently or have completed ECON 5823 with a B- or better. Restricted to students with graduate standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 7662 - Health Economics II**

This course teaches an economic approach to studying the various policies that affect these risky health behaviors. The extensive economic literature on the causes and consequences of risky health behaviors will be studied. Co-requisite ECON 5823 OR prerequisite ECON 5823 with a grade of B- or better. Restricted to students with graduate standing. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ECON 8990 - Doctoral Dissertation**

Designed to allow doctoral students to conduct research for course credit prior to advancement to candidacy. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Note: Students must be in the Health Economics PhD program and have permission from the instructor to be eligible for this course. Term offered: fall, spring. Repeatable. Max hours: 50 Credits. **Semester Hours:** 1 to 10

### **Education Admin & Supervision**

#### **EDUC 5000 - Special Topics: Administrative Leadership and Policy Studies**

Specific topics vary. Focus is on faculty-developed options to standard course offerings to facilitate program development and distance-learning activities. Repeatable. Max Hours: 40 Credits. **Semester Hours:** 0.5 to 10

#### **EDUC 5001 - Special Topics: Administrative Leadership and Policy Studies**

Repeatable. Max Hours: 40 Credits. **Semester Hours:** 1 to 10

## **EDUC 5010 - Paraeducator Supervision Academy**

Provides the paraeducator with knowledge and skills to work effectively in teams. Paraeducators refine their knowledge of the characteristics of paraprofessionals in education, the distinction between professional and paraprofessional roles and responsibilities, liability and ethical issues. Max hours: 1 Credit. **Semester Hours:** 1 to 1

## **EDUC 5015 - Developmental Intervention Supervisor Academy (DISA)**

Developmental Intervention Supervisor Academy provides early intervention professionals with the knowledge and skills to work effectively in teams and to utilize and supervise Developmental Intervention Assistants (DI Assistant is the title used in Colorado for paraprofessionals in early intervention services). Max hours: 1 Credit. **Semester Hours:** 1 to 1

## **EDUC 5020 - Trainers of Paraeducator Academy**

Provides the professional educator with the skills to provide effective presentations to paraprofessionals in schools. Max hours: 1 Credit. **Semester Hours:** 1 to 1

## **EDUC 5025 - Developmental Intervention Trainers Academy (DITA)**

Developmental Intervention Trainer Academy (DITA) is offered to early interventional professionals who have completed EDUC 5015 (DISA). DITA provides the participants skills to become effective trainers who deliver training to Developmental Intervention Assistants (i.e. paraprofessionals in early intervention services in Colorado). Max hours: 1 Credit. **Semester Hours:** 1 to 1

## **EDUC 5030 - Top Cadre of Trainers (TOPCAT) Seminar**

Provides CO-TOP Trainers (school professionals who have been through the PSA: EDUC 5010 and TOPA: EDUC 5020) ongoing support in their roles as supervisors and trainers of paraeducators. Through this seminar trainers receive updated information about CO-TOP Academies, find collegial support from other trainers, exchange ideas, gain presenting and adult teaching ideas, and receive feedback on their teaching of paraeducator academies. This seminar also addresses the questions and needs of the individual CO-TOP trainer with regard to CO-TOP paraeducator training materials and processes. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **EDUC 5651 - Foundations of Leadership**

This courses focuses on leadership and the characteristics and foundational elements of what the leaders need to think about and do while providing the opportunity for students to apply this foundational learning to leadership in their own organization. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **EDUC 5652 - Leadership for Equity/Social Justice**

Understand our own experiences and experiences of historically marginalized groups, with the historical and philosophical forces that have led to inequities, critically analyze current conditions and to work to develop school policies, curriculum and relationships to create access and opportunities. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **EDUC 5653 - Leadership Practices for Responsive Change**

This course focuses on leadership and the change process of individual and organizational responsive change with opportunity for students to learn about/apply this learning to the process of leading responsive change in the context of an organization. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **EDUC 5654 - Leadership Practice Capstone**

The Capstone Experience is a culminating project that provides a way for students to demonstrate the knowledge and skills they acquired during the MA program, linked to issues of equity or social interest related to the United States educational system. Prereqs: EDUC 5651, EDUC 5652, and EDUC 5653. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **EDUC 5655 - Leadership Practices for Transformative School Reform**

This course will create a community of learners who can work together to investigate constructs and principles for school turnaround and transformation. The course will draw on previous learning for the practical application of intentional leadership practices for school reform and transformation. Change theory will be considered and applied to reform and transformation. Students will have the opportunity to study current reform efforts. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **EDUC 5751 - Principal/Administrator Licensing I**

This program section (1 of 4) combines foundational learning in leadership, school improvement, instructional leadership and equity via hybrid sessions. Clinical-practice experiences are required. Assessment is performance-based and submitted to LIVETEXT. Prereq: admission to the program. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 9

## **EDUC 5752 - Principal Administrator Licensing II**

This program section (2 of 4) combines continued learning in leadership, school improvement, instructional leadership and equity via hybrid sessions. Clinical-practice experiences are required. Assessment is performance-based and submitted to LIVETEXT. Prereq: admission to the program. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 9

### **EDUC 5753 - Principal/Administrator Licensing III**

This program section (3 of 4) combines Continued learning in leadership, school improvement, instructional leadership and equity via hybrid sessions. Clinical-practice experiences are required. Assessment is performance-based and submitted to LIVETEXT. Prereq: admission to the program. Max hours: 9 Credits. **Semester Hours:** 3 to 9

### **EDUC 5754 - Principal or Administrator Licensing IV**

This program section (4 of 4) combines foundational learning in leadership, school improvement, instructional leadership and equity via hybrid sessions. Clinical-practice experiences are required. Assessment is performance-based and submitted to LIVETEXT. Prereq: admission to the program. Max hours: 9 Credits. **Semester Hours:** 3 to 9

### **EDUC 5840 - Independent Study: EDUC**

Master's. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 4

### **EDUC 5950 - Master's Thesis**

Repeatable. Max hours: 16 Credits. **Semester Hours:** 1 to 8

### **EDUC 6000 - Special Topics: Administrative Leadership and Policy Studies**

Specific topics vary; focus is on faculty-developed options to standard course offerings to facilitate program development and distance-learning activities. Repeatable. Max Hours: 40 Credits. **Semester Hours:** 1 to 10

### **EDUC 6840 - Independent Study**

Max hours: 4 Credits. **Semester Hours:** 1 to 4

### **EDUC 6951 - Master's Thesis**

Repeatable. Max hours: 16 Credits. **Semester Hours:** 4 to 4

### **EDUC 7100 - Leadership in Education**

Orients students to broad periods of administrative science, philosophical and behavioral underpinnings of various models and types of leadership, and develops doctoral-level analysis and writing skills to articulate self-knowledge as leader and the application of appropriate leadership practices in context. Prereq: admission to the doctoral program. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **EDUC 7230 - Organizational Performance In Educational Contexts**

Explores connections between organizational behaviors and outcomes as well as external and internal factors influencing organizational behavior. The course focuses on how education organizations learn, how they can use that learning to improve performance, and what techniques are available to help understand present performance and affect future performance. Prereq: permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **EDUC 7500 - Strategic Human Capital Development**

This course focuses on understanding and leveraging the personnel function of an educational organization. You will learn how to strategically align and maximize your human capital with organizational strategic objectives. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **EDUC 7510 - Strategic Organizational Management**

An effective partnership between the board, community and institutional leader is essential to fulfilling the mission of an educational organization. This course examines the importance of strategic visioning, strategic planning, and specific communication strategies. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **EDUC 7520 - Strategic System Improvement**

The fundamental purpose of educational organizations (schools, districts, community colleges, higher education, non-profits) is to ensure high levels of learning for all. This course addresses topics such as data development and management, accountability, curriculum assessment and instruction, continuous improvement, and professional learning. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

## **EDUC 7530 - Strategic Leadership Development**

Successful leaders are able to articulate, protect and promote what is important. This course will examine the challenges of educational leadership and help participants clarify the core values essential to their success as a leader. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **EDUC 7600 - Higher Education Policy and Governance**

In this course, students are challenged to explore the governance and policy environment of Higher Education, to understand the multiple layers of governance and the complex web of policy-making, to analyze the differences among systems of governance, and to evaluate the essential components and consequences of policies. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **EDUC 7610 - Strategic Enrollment Management in Higher Education**

Course is designed to deepen the understanding of the complexities of strategic enrollment management as research and practice, delving into the breadth of its critical issues and rapidly developing context, including the student lifecycle; the focus on equity and inclusion; emerging models for student success; and financial implications. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDUC 7620 - Contemporary Issues in Higher Education**

This course is a study of the critical, contemporary issues in higher education and the impact on institutions' goals for equity and student success. Students in the course will reach beyond the current context, understanding the origins of critical questions, and the impact of these issues on leadership decision-making. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDUC 7640 - Higher Education Finance and Strategic Resource Allocation**

This course is designed to introduce students to the complexity of higher education funding, the vast variations across systems, and the critical role of data informed decision making in strategic resource allocation its impact on student access and success. Students will enhance their own capacity to contextual decisions and consider parameters. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDUC 7650 - Data-Informed Decision-Making and Predictives in HED**

Course is designed to elevate the understanding of data-informed decision making and predictives as it relates to research & practice; defining leaders responsibility in creating a datadriven and ethically responsible culture using a lens of equity and inclusion. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDUC 7840 - Independent Study: EDUC**

Doctoral. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 4

### **Education and Human Dvelopment**

#### **EDHD 1019 - Introduction to Urban Education**

In this course you will examine the sociological issues related to urban schools, communities, and teaching. We will look at such topics as school culture, diversity, ethnicity, and social realities in American schools. Students will critically examine current education issues that

affect their lives, their local community, and P-12 classrooms throughout the state and the country. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDHD 1030 - Early Field Experience and Seminar**

Working within the community to support children's learning requires competencies explored in this course. The experiences of seminar, paired with work at a local school or community-based context, will help students develop theoretical grounding as a community based educator. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDHD 1930 - Community Based Field Experience & Seminar**

Students learn the dispositions of a community-grounded educator and develop an asset-based lens for working with students, families, & communities through 60 hours of required field experience and a mediated seminar. Prereq: Must have one semester successfully completed at UCD prior to enrollment unless a transfer student; must have completed CBI Background Check & Oath & Consent process prior to enrolling. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDHD 2050 - Current Topics in Education and Human Development**

Current topics that explore community and educational settings in Education and Human Development (EDHD) to be selected by the instructor. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 3

### **EDHD 2840 - Independent Study in Education & Human Development**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

### **EDHD 2910 - Service Learning in Education and Human Development**

This course prepares our students to become responsible and resourceful citizens who partner with community organizations and work to serve a wide range of needs and issues within culturally and linguistically diverse environments. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 4

### **EDHD 2930 - Learning & Development Field Experience & Seminar**

Teacher candidates engage in field experience 2, half-days per week in early childhood and primary classrooms working with children to support literacy learning while also observing, documenting and reflecting on how learning & development is facilitated. Prereq or coreq: LCRT 3720 and LCRT 4710. Restriction: Restricted to students in Education and Human Development with between 27 and 180 cumulative credit hours. Max hours: 3 Credits. **Semester Hours:** 2 to 3



### **EDHD 3930 - Diverse Learners Field Experience & Seminar**

EDHD 3930 is a comprehensive clinical block field experience designed to support teacher candidates' learning of issues and practices relevant to students with disabilities and English language learners. A seminar will mediate teacher candidates' experiences from their various classroom settings. Prereq or Coreq: SPED 4030. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDHD 4050 - Special Topics in Education and Human Development**

Advanced study of special topics that examine community and educational settings in Education and Human Development (EDHD) to be selected by the instructor. Maybe repeated for credit. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **Educational Foundations**

#### **EDFN 1000 - Equality, Rights & Education**

Examines the history of U.S. public schooling through landmark court cases. Investigates/analyzes how apartheid came to be institutionalized, how forces of desegregation achieved a series of momentous victories, and how those victories have been undermined through the resegregation of schools. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **EDFN 1111 - Freshman Seminar**

Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **EDFN 3000 - Undocumented Mexican Immigration**

The socio-legal construction of Mexican undocumented immigration from the early decades of the twentieth century to the current era is addressed. Social justice questions including access to higher education arising from the racialization of Latino/a immigrants are also examined. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **EDFN 4000 - Food Justice in City & Schools**

Food justice examines systemic inequities in access to healthy food. The history of school/community gardens, developments in urban agriculture and school/city policies are examined. The intersection of urban agriculture, hunger, and schooling/learning is examined in school gardens and school farmer's markets. Cross-listed with EDFN 5000. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **EDFN 4001 - Problematizing Whiteness: Educating for Racial Justice**

Critical Whiteness Studies provides a deeper analysis of race that accounts for both sides of the race coin: the plight of people of color AND how Whites are complicit. This class looks deeper into how race operates within White contexts and how that impacts people of color so we bridge how Whites AND people of color can work together towards a racially equitable society. Cross listed with ETST 4010 and EDFN 5001. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDFN 4010 - Social Foundations and Cultural Diversity in Urban Education**

This course focuses on the role of cultural diversity in the United States school system and what this means for educators oriented toward social justice. The intention of this course is to have teacher candidates engage in exploring the most salient issues surrounding education in the United States, developing an understanding of the complex relationships between schools and the larger society of which they are a part. This course closely examines important contemporary and historical societal issues such as race, social class, gender, ethnicity, sexual identity, politics, and dynamics of power and privilege. Cross-listed with EDFN 5010. Restriction: Restricted to students in Education and Human Development with between 27 and 180 cumulative credit hours or students in the Education Minor EDST-MIN or CLAS secondary students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

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identity, politics, and dynamics of power and privilege. Cross-listed with EDFN 4010. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDFN 5050 - Critical Issues in American Education**

Examines the social values and forces in American society which shape or influence the aims, philosophies, methods, content, and problems of the American educational enterprise. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDFN 5700 - Global Education and 21st Century Learning**

Explore challenges and opportunities of global citizenship. Articulate framework for 21st Century Learner. Examine influence of social and political movements, including colonization, on the development of communities and cultures. Explore connections and intersections of local and global issues and systems. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDFN 5800 - Special Topics**

Topics will vary. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **EDFN 7240 - Culture of Education Policy**

This course examines major issues in education policy analysis. Students will be required to critically analyze an educational policy issue uncovering the context, determining how the policy was implemented and what the outcomes were, intended as well as unintended. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDFN 7250 - School and Society**

Policies and educational reforms affecting the technical core of schooling: curriculum, teaching, learning, assessment, and organization. Students develop research and policy analysis skills and investigate social and political factors affecting what is taught and learned in schools. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDFN 7400 - Epistemologies: Ways Knowing, Res Paradigms, & Counter-Epistemologies**

Epistemologies addresses conceptions and approaches to ways of knowing including intellectual traditions and their history as well as epistemological counter-stories of marginalized and subaltern ways of knowing that expose the contingency and bias of dominant forms of knowing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDFN 7410 - Power and Privilege: The Social Construction of Difference**

This course will focus on understanding culture and diversity, recognizing the role of power and privilege in both individual and institutional interactions, and developing a philosophy of social justice and equity. Prereq: Doctoral Student Status. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDFN 7420 - Foundations of Education in Urban and Diverse Communities**

This course focuses on the complex relationship between schools and the larger society of which they are a part. Emphasizing historical, political, and sociological perspectives, this course explores the interplay of social systems in education (economic, political, social, health, legal), analyze education policies, and the intended and unintended consequences of these processes. Prereq: Doctoral Student Status. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDFN 7430 - Working with Families and Communities**

Designed for veteran and novice teachers and administrators to add to their present understanding of the function of families and communities in contemporary society. Participants examine key theoretical texts of important scholars in the field of human development, with an emphasis on topics such as the politics of everyday life, the salience of linguistic & cultural identity in the life of families/communities, and the political-economic and social factors that shape the "life course" of families/communities. Prereq: Doctoral Student Status. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDFN 7833 - Culture and Critical Theory**

Provides an introduction to critical inquiry. General topics include: the development and of the concept of culture, the development and application of critical theory, critical race theory and critical pedagogy. Through the course, students are guided to explore critical theory work in their own field. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **EDFN 7840 - Independent Study: EDFN**

Repeatable. Max Hours: 4 Credits. **Semester Hours:** 1 to 4

## **Electrical Engineering**

### **ELEC 1201 - Introduction to Electrical Engineering**

Introduces the field of electrical engineering and the computer -- its primary tool. ELEC faculty members explain the various specialties within the field by demonstration. Word processors, spreadsheets, and engineering software are introduced. Note: This course is not available to students who have taken ELEC 2142. ENGR 1000 cannot be substituted for ELEC 1201. Prereq: High School Trigonometry. Max hours: 1 Credit. **Semester Hours:** 1 to 1

## **ELEC 1510 - Logic Design**

The design of combinatorial and sequential switching circuits. Topics include Boolean algebra, Boolean function minimization technique, combinatorial circuit analysis and synthesis, synchronous sequential circuit analysis and synthesis, algorithmic state machine design, asynchronous sequential circuit analysis and synthesis. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ELEC 1520 - Embedded Systems Engineering I**

This course serves as an introduction to the "C" programming language for electrical and computer engineers. Programming concepts are introduced from a hardware design standpoint specifically covering micro-controller and embedded systems design issues. Programming for engineering applications are studied. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ELEC 2132 - Circuit Analysis I**

Introduces circuit analysis: basic principles, operational amplifier circuits, first-order and second-order circuits, steady-state sinusoidal analysis with phasor mathematics. Prerequisite: Math 2411 with a C- or higher and Phys 2311 with a C- or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

## **ELEC 2142 - Circuit Analysis II**

Sequential course after ELEC 2132. Topics include: Solution of circuits using Laplace transforms, frequency domain analysis, additional steady-state solutions, Bode plots, active filters, pulses, impulses, and computer-aided analysis. Prerequisite: Math 2421 with a C- or higher and Phys 2331 with a C- or higher, Elec 2132 with a C- or higher. This course can be taken stand alone without a lab. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ELEC 2520 - Embedded Systems Engineering 2**

A second semester computer engineering course covering basic computer architecture including CPU's, memory, peripherals, and operating systems including development tools, Kernel selection, file systems, and storage device manipulation, boot loaders, USB, networking, device drivers, and real-time operating system usage. Prerequisite: ELEC 1520 with a C- or higher. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

## **ELEC 2531 - Logic Laboratory**

Experiments in digital logic utilizing both computer simulation and actual analysis using integrated circuits. Initially, combinatorial logic circuits are studied, including circuits such as binary adders and multipliers, followed by sequential circuits, including counters. Meters and oscilloscopes are introduced. Use of computer-aided design tools facilitating design, simulation,

and implementation of digital systems using field-programmable logic devices are an integral part of the entire course. Prereq: ELEC 1510. Max Hours: 1 Credit. **Semester Hours:** 1 to 1

### **ELEC 2552 - Sophomore Circuits Laboratory**

Conduct experiments in circuit measurement using oscilloscopes, power supplies, and function generators. Verify basic circuitry, basic circuit theorems such as Ohm's Law, Kirchoff's Law, and Thevenin's theorem and Norton's theorem. Learn by experiments: impedance functions, transfer functions, resonance, Fourier series and analog filters. Prereq/coreq: ELEC 2142. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **ELEC 3030 - Electric Circuits and Systems**

This basic electrical engineering course is for non-majors (does not apply to BSEE degree). Students study circuit analysis, transformers, electric motors, and simple electronic circuits (diodes and transistors). Prereq: MATH 2421 and PHYS 2331 with a C- or higher. Restriction: Restricted to majors within the College of Engineering, Design and Computing. Cross-listed with MECH 3030. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 3133 - Electromagnetic Fields**

Fundamental physics and applications of electric and magnetic fields are covered. Topics include: vector analysis in multiple coordinate systems, Maxwell's equations in free space and material regions including boundary conditions, static and quasi-static electric and magnetic fields, uniform plane waves for free space and for materials. Prerequisite: MATH 2421 with a C- or higher and PHYS 2331 with a C- or higher, ELEC 2132 with a C- or higher, MATH 3195 with a C- or higher. Restriction: Restricted to students within the College of Engineering, Design and Computing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 3164 - Energy Conversion**

Theory of transformers. Energy conversion concepts. Basic rotating energy converters, including direct current, synchronous and induction machines and applications. Prereq: ELEC 2142. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 3215 - Electronics I**

The learning objective is fundamental semiconductor theory as applied to electronic circuits. Topics include: semiconductor theory, P-N junctions and diode applications, power supply design, transistor (BJT) theory and applications, low-frequency amplifiers, FET and MOSFET devices. Prereq: ELEC 2132 with a grade of C- or higher, PHYS 2331 with a grade of C- or higher and CHEM 1130 OR ENGR 1130 with a grade of C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ELEC 3225 - Electronics II**

BJT and FET transistor models at high frequencies, multistage amplifiers, frequency response of amplifiers. Feedback, operational amplifiers, oscillators, power amplifiers, and introduction to power electronics. Prereq: ELEC 2142 and 3215. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ELEC 3316 - Linear Systems Theory**

Introduces the fundamentals of signals and systems analysis. Topics include: time domain analysis of continuous and discrete time systems, frequency domain (Laplace and z-transform) analysis, applications to filters and feedback systems, Fourier transform for both continuous and discrete time signals, sampling and signal reconstruction, applications to communication systems and state space representation. Learning experience is enhanced by using MATLAB-based examples and experiments. Prereq: ELEC 2142. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ELEC 3651 - Digital Hardware Design**

The specification and design of large digital hardware systems. Applications include using a hardware description language and simple digital control circuits. Prereq: ELEC 2531 and ELEC 2520. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ELEC 3715 - Electronics Laboratory**

Design and experimental verification of the operation of filter circuits, power supply circuits, transistor amplifier circuits and FET circuits. Prereq: ELEC 2552. Prereq/Coreq: ELEC 3215. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 1

## **ELEC 3724 - Energy Conversion Laboratory**

Basic electro-mechanical energy conversion concepts as applied to the synchronous machine, induction machine, and DC machine; the transformer; applications. Prereq: ELEC 2142. Prereq or Coreq: ELEC 3164. Max hours: 1 Credit. **Semester Hours:** 1 to 1

## **ELEC 3735 - Junior Laboratory**

Design and measure: several nonlinear op-amp circuits, a multi-stage amplifier, and a complementary-symmetry output stage. Oral presentations on experiments to be given. Prereq: ELEC 3715. Prereq/Coreq: ELEC 3225. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 1

## **ELEC 3817 - Engineering Probability and Statistics**

Topics include: definition of probability, conditional probability, independence, combined experiments and Bernoulli trials, random variables, joint distribution and density functions, correlations, sample mean and variance. Also, introduction to random processes, auto and cross correlation functions, spectral density of random signals, responses of a linear system to random inputs. Prereq: MATH 3195 and 2421. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 3939 - Internship**

Students gain engineering design experience involving application of specific technical concepts and skills in a supervised industrial environment. (Must have approval from ELEC faculty.)

Prereq: ELEC 2142. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ELEC 4005 - IC Design**

Explores digital integrated circuit design including MOS processing steps, physical operation, building blocks of digital circuits, advanced nMOS, pMOS and CMOS circuit design, silicon VLSI technology and circuit and chip level. Spice and lay-out Editor are used. The physical relationship between circuit design and actual silicon layout and structure and technology are emphasized. Prereq: Graduate standing or permission of instructor. Prereq: ELEC 3225. Cross-listed with ELEC 5005. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4025 - Device Electronics**

A course relating performance and limitations of solid state devices to their structures and technology. For both advanced circuit and device engineers. Semiconductor physics and technology, pn-junction and MOS devices used in modern integrated circuits. Prereq: ELEC 3225 and senior standing. Cross-listed with ELEC 5025. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4133 - Advanced Electromagnetic Fields**

A course focused on electromagnetic waves. Topics include: electromagnetic power, reflection and transmission of uniform plane waves in layered media, rectangular wave guides, two-conductor transmission lines, Smith Chart representation of wave impedance and reflection. Prereq: ELEC 3133. Cross-listed with ELEC 5033. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4134 - Introduction to Microwave Circuit Design**

This course provides the basic principles of microwave circuit design, including transmission line theory, network parameters, signal flow graphs, design of high frequency matching networks, filters, hybrids and couplers using waveguide elements, high frequency amplifier and mixer design. Prereq: ELEC 3133. Cross-listed with ELEC 5134. Max hours: 3 Credits. **Semester Hours:** 3 to 3



## **ELEC 4136 - Control Systems Analysis**

Introduces students to the fundamentals of analysis and design of feedback systems. Topics include: mathematical models of linear continuous-time systems applied to modeling physical systems in the time and frequency domain, control system characteristics, Routh's stability and transient response analysis, Nyquist stability and polar plots, analysis and design of linear control systems by root locus and frequency response, methods, compensator implementation, finite-precision numerical effects, round-off errors, and computer-based design applications. Prereq: ELEC 3316. Coreq: ELEC 3817. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ELEC 4164 - Electric Drive Systems**

Covers power electronics drives for rotating electric machinery. Topics include power electronics elements for drives, load characteristics, dynamic modeling of AC machines, fundamental control algorithms, simulation and practical commercial drives. Prereq: ELEC 3164. Cross-listed with ELEC 5164. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

## **ELEC 4170 - Electric Drive Systems Laboratory**

Offers hands-on experience on rotating electric machine drive simulations and commercial systems. Sessions include pulse-width modulation (PWM) inverter, induction, DC, and synchronous machine drives. Matlab/Simulink and a commercial inverter will be utilized. Cross-listed with ELEC 5170. Prereq or Co-req: ELEC 4164/5164 or equivalent. Max hours: 1 Credit. **Semester Hours:** 1 to 1

## **ELEC 4174 - Power Electronic Systems**

Topics to be covered include: power electronics fundamentals and applications in power systems; uncontrolled, semi-controlled and fully controlled power semiconductors; converters design and control. Prereq: ELEC 3164. Cross-listed with ELEC 5174. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ELEC 4184 - Power Systems Analysis**

Topics to be covered include: complex power; per-unit quantities; modeling of generators, transformers and transmission lines; power flow problem; economic dispatch; faults and sequence networks; and an introduction to power system protection and dynamics. Prereq: ELEC 3164. Cross-listed with ELEC 5184. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ELEC 4225 - Advanced Electronics**

Switching state models of discrete components and integrated circuits, including logic gates, comparators, and operational amplifiers. Input, output, and transfer characteristics. Non-ideal properties. Analog-digital and digital-analog conversion. MOS-integrated circuits. Prereq: ELEC

3215, 3225. Restriction: Restricted to students within the College of Engineering, Design and Computing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4247 - Communication Theory**

Introduces the principles of analog and digital communication systems. Series expansion and Fourier Series and transforms. The sampling theorem. Stochastic principles and noise. Linear systems and Fourier analysis. Design of transmitters and receivers: modulation and demodulation schemes. Some information theoretic concepts: source coding, channel coding, channel capacity and performance measures. Prereq: ELEC 3316 and 3817. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4248 - Digital Communication Systems**

Introduces digital communication systems covering elements of information theory; mathematical representation of signals and systems; modulation and demodulation for the additive Gaussian noise channel; performance analysis of various transmission formats; synchronization; coded waveforms; decoding algorithms; and other related topics. Prereq: ELEC 3316, 3817; recommended ELEC 4247. Cross-listed with ELEC 5248. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4249 - Space Communications Systems**

Presents the art of space communications system design around the framework of the link budget and the essential analysis tool of the radio system designer. The budget is examined from theoretical and practical viewpoints. Pointers and motivation for further study in each of the related engineering disciplines are provided. Topics to be examined include satellite orbits, propagation, antennas, noise, modulation, coding and hardware or software. Prereq: Permission of instructor. Cross-listed with ELEC 5249. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4276 - Digital Control Systems**

Topics to be covered include: discrete-time systems and the z-transform, characteristics of open-loop and closed-loop discrete-time systems, time-response characteristics and stability analysis, design of digital and hybrid control systems using z-transform, root locus, frequency domain, and state variable compensation techniques, compensator on, implementation, and computer-based design applications. Prereq: ELEC 3316 and ELEC 3817. Cross-listed with ELEC 5276. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4309 - Senior Design Project I**

Design methodology and tools, project planning and team building, ethics in engineering and research, career planning and portfolio building. Project designs are completed and presented

to the class. Prereq: Students must complete their Senior/30 hour check prior to enrollment. Prereq/Coreq: All required ELEC 3000-level classes and labs. ELEC 4309 and ELEC 4319 must be completed in subsequent academic semesters. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4319 - Senior Design Project II**

Project designs completed in ELEC 4309 are constructed and tested. Oral and written presentations of the completed project performance are required. Prereq: ELEC 4309 in subsequent academic semester. Students must complete their Graduation Agreement prior to enrollment. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4333 - Introduction to Computational Electromagnetics**

An intro to computational electromagnetics based on the Finite Difference Time-Domain (FDTD) covering, finite difference methods, the Yee algorithm, numerical error, stability, boundary conditions, source excitations, hands-on programming experience and application of FDTD to real problems. Prereq: ELEC 3133. Cross-listed with ELEC 5333. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4373 - Optical Engineering**

This course introduces some of the most important concepts in optical engineering and prepares students a solid foundation to apply them to applications in the industry and academic research. Prereq: ELEC 3133 Electromagnetic Fields. Cross-listed with ELEC 5373. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4375 - Engineering Neuroscience**

In this course, mathematical models and data processing strategies will be introduced as well as other cutting-edge research techniques to help students understand how these techniques can be applied to solve modern neuroscience problems. Prereq: ELEC 3316 or graduate standing. Cross-listed with ELEC 5735 and NRSC 7674 (Anschutz Medical Campus course). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4406 - Control Systems Laboratory**

This lab includes system identification, design of velocity control systems, design of PID controllers and control systems using state variable feedback. Prereq or Coreq: ELEC 4136. Max Hours: 1 Credit. **Semester Hours:** 1 to 1

### **ELEC 4423 - Radio Frequency Laboratory**

Projects involve modern RF analyzers, wave-guide devices, time-domain techniques, characterization of filters/amplifiers, signal propagation and scattering, harmonic mixing, and

radio frequency identification. Students will gain experience using MATLAB for data acquisition and processing. Prereq: ELEC 3133, 3225 and 3735. Cross-listed with ELEC 5423. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **ELEC 4435 - Advanced Electronics Laboratory**

Projects related to digital logic, analog and digital switches, A/D and D/A converters, and design of signal filters. Prereq: ELEC 3225 and 3735; Prereq or Coreq: ELEC 4225. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **ELEC 4444 - Power Systems Laboratory**

This lab introduces the student to modern computational tools used in power system analysis. Algorithms to solve the "power flow problem," the "economic dispatch problem," and the "optimal power flow problem" are discussed and implemented in the Matlab-Simulink mathematical analysis software package. Coreq: ELEC 4184. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **ELEC 4466 - Adaptive Control System Design**

Basic concepts in adaptive feedback control. Overview of application areas. Stability of non-linear systems and hyperstability approach to the design of adaptive controllers. Passivity concept and Liapunov stability. Design of model reference adaptive systems, self-tuning regulators, stochastic adaptive, and dual control systems. Computer-based design applications. Emphasis is placed on design projects. Prereq: ELEC 4136 or 4276. Cross-listed with ELEC 5466. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4467 - Communications Laboratory**

Analysis and design in three main areas: traditional analog communications at low and medium frequencies, digital communications, and microwave communications systems. Extensive use of spectrum analysis from low frequencies up to microwave range. Projects include noise, AM, FM, PM, PLL, sampling, quantizing, encoding, TDM, FSK, QPSK, 16QAM, receivers, and satellite communications systems. Prereq: ELEC 3735; Prereq or Coreq: ELEC 4247 or ELEC 4248. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **ELEC 4474 - Power Electronics Laboratory**

The power electronics laboratory introduces students to seven fundamental switchmode power conversion topologies, along with voltage and current feedback control, assembled on a reconfigurable power pole circuit board with external power supplies and laboratory. Coreq: ELEC 4174. Cross-listed with ELEC 5474. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **ELEC 4501 - Microprocessor Based Design**

Covers advanced treatment of embedded system design using microprocessors. Analog input circuitry is interfaced to a microprocessor, and a PC board layout is created to develop a complete system design. Software/Operating System is implemented for realtime I/O. Prereq/Coreq: ELEC 3651. Cross-listed with ELEC 5501. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4511 - Hardware-Software Interface**

Computer engineering methods in hardware and software design applied to problems drawn from the mini- and micro-computer systems field. Hardware and software techniques for the design of combined hardware or software are developed. Interface and real-time programming techniques are considered. Graduate level requires additional projects and homework. Prereq: ELEC 3651. Cross-listed with ELEC 5511. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4521 - Microprocessor Laboratory**

Provides support for the projects assigned in ELEC 4501 - a complete embedded system is designed, built and tested. Coreq: ELEC 4501. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **ELEC 4555 - VLSI Circuit Simulation**

Computer methods for large integrated circuits. Theory and practice of VLSI circuit simulation. Nodal formulations of networks. Computer generation of sensitivities. Modeling active devices. DC solution of nonlinear networks. Prereq: ELEC 3225. Cross-listed with ELEC 5555. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4561 - Hardware-Software Lab**

Projects related to the software interface of a processor to external devices. Topics include A/D converters, serial and parallel interfaces. Prereq: ELEC 3651 and Coreq: ELEC 4511. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **ELEC 4637 - Digital Signal Processing**

Discrete-time signals and systems in the time and frequency domain. Digital filter structures, design of FIR filters by windowing, optimum approximations of FIR filters. Design of digital IIR filters from continuous time domain. Computer-aided design of digital filters. The discrete Fourier transform and DSP algorithm implementation. Analysis of finite word length effects. Application of digital signal processing. Prereq: ELEC 3316 and 3817. Cross-listed with ELEC 5637. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4644 - Introduction to Biomedical Imaging**

An important component of the recent expansion in biomedical engineering is the area of biomedical imaging. This ELEC 4644/5644 course is an introduction to biomedical imaging systems, not only covering the fundamentals of imaging physics but also the applications of four primary biomedical imaging modalities: X-Ray Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Nuclear Medicine (i.e. PET, SPECT), and Ultrasound Imaging. Prereq: ELEC 3316. Cross-listed with ELEC 5644. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4678 - Quantum Electronics**

The course teaches students to understand the basic concepts of quantum mechanics and to learn the mathematical tools needed and to be familiar with some of the technical knowledge that applies quantum mechanics to various advanced problems in engineering. Prereq: PHYS 2331 and MATH 3195. Cross-listed with ELEC 5678. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4688 - Introduction to Nondestructive Testing**

A basic, broad understanding of the principles of nondestructive testing and evaluation is provided. The main objective of this course is to attract students to NDT fields and eventually help address the increasing needs of NDT engineers and technicians. Interaction and collaboration with local NDT industries will also be emphasized. As an introductory course, a broad interdisciplinary knowledge of NDT will be covered in the following sub-areas: Visual, Penetrant, Magnetic Particle, Eddy Current, Microwave, Ultrasonic, and Radiography. Prereq: ELEC 1201 and ELEC 3316. Cross-listed with ELEC 5688. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4723 - High Performance Computer Architecture**

High Performance Computer Architecture covers the design of advanced computing systems. In particular, the course includes the design of modern microprocessors, characteristics of the memory hierarchy, and issues involved in multithreading and multicore architectures. Prereq: ELEC 3651. Cross-listed with ELEC 5723. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4727 - Computer Vision & Image Processing Acceleration**

Real-time constraints on computer-vision and image processing applications have motivated numerous explorations of multicore architectures to provide more efficiency through hardware parallelism and acceleration. This course undertakes the study of image processing and computer vision algorithms in the context of parallel hardware. Cross-listed with ELEC 5727. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 4755 - Renewable Energy Systems**

This course focuses on the modeling, analysis and control of grid-connected wind and photovoltaic energy systems. Prereq: ELEC 3164. Cross-listed with ELEC 5755. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ELEC 4800 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ELEC 4840 - Independent Study: ELEC**

An opportunity for independent creative work. Prereq: Permission of instructor. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ELEC 5005 - IC Design**

Explores digital integrated circuit design including MOS processing steps, physical operation, building blocks of digital circuits, advanced nMOS, pMOS and CMOS circuit design, silicon VLSI technology and circuit and chip level. Spice and lay-out Editor are used. The physical relationship between circuit design and actual silicon layout and structure and technology are emphasized. Prereq: Graduate standing or permission of instructor. Cross-listed with ELEC 4005. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5025 - Device Electronics**

A course relating performance and limitations of solid state devices to their structures and technology. For both advanced circuit and device engineers. Semiconductor physics and technology, pn-junction and MOS devices used in modern integrated circuits. Prereq: ELEC 3225 and senior standing. Cross-listed with ELEC 4025. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5033 - Advanced Electromagnetic Fields**

A course focused on electromagnetic waves. Topics include: Poynting's power theorem, reflection and transmission of uniform plane waves in layered media, two-conductor transmission lines, rectangular wave guides, Smith Chart elements of radiation and antenna. Prereq: ELEC 3133 and permission of instructor for undergraduates. Cross-listed with ELEC 4133. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5133 - Electromagnetic Radiation and Antenna**

Solution of inhomogeneous wave equation. Radiation fields of elementary dipole, linear wire antenna, uniform and non-uniform linear arrays. Array synthesis. Farzone field patterns, directivity and beamwidth. Diffraction fields of aperture sources, horn antenna, conic surface reflector sources, lens antenna. Ray tracing methods. Transient-receive link. Selected Topics.

Prereq: ELEC 4133, graduate standing and permission of instructor for undergraduates. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5134 - Introduction to Microwave Circuit Design**

This course provides the basic principles of microwave circuit design, including transmission line theory, network parameters, signal flow graphs, design of high frequency matching networks, filters, hybrids and couplers using waveguide elements, high frequency amplifier and mixer design. Prereq: ELEC 3133. Cross-listed with ELEC 4134. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5164 - Electric Drive Systems**

Covers power electronics drives for rotating electric machinery. Topics include power electronics elements for drives, load characteristics, dynamic modeling of AC machines, fundamental control algorithms, simulation and practical commercial drives. Prereq: ELEC 3164. Cross-listed with ELEC 4164. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ELEC 5170 - Electric Drives Systems Laboratory**

Offers hands-on experience on rotating electric machine drive simulations and commercial systems. Sessions include pulse-width modulation (PWM) inverter, induction, DC, and synchronous machine drives. Matlab/Simulink and a commercial inverter will be utilized. Cross-listed with ELEC 4170. Prereq: ELEC 4164 or equivalent. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **ELEC 5174 - Power Electronic Systems**

Topics to be covered include: power electronics fundamentals and applications in power systems; uncontrolled, semi-controlled and fully controlled power semiconductors; converters design and control. Prereq: ELEC 3164 and graduate standing or permission of instructor. Cross-listed with ELEC 4174. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5184 - Power Systems Analysis**

Topics to be covered include: complex power; per-unit quantities; modeling of generators, transformers and transmission lines; power flow problem; economic dispatch; faults and sequence networks; and an introduction to power system protection and dynamics. Prereq: ELEC 3164 and graduate standing or permission of instructor. Cross-listed with ELEC 4184. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5194 - Power Systems Operation and Control**



This course introduces the student to various operational strategies the power industry uses today to operate the power system. Topics to be covered include: economic dispatch, unit commitment, optimal power flow (linear and nonlinear), transmission congestion, control areas, state estimation, and an introduction to power markets. Prereq: ELEC 4184 or ELEC 5184 or graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5210 - Optimization Methods in Engineering**

Unconstrained optimization, gradient methods, conjugate direction methods, data fitting and function estimation. Applications in control, system identification and radar systems. Optimization over a convex set, LMS algorithms in adaptive systems, convergence properties. Nonlinear programming, Lagrange multipliers, projection algorithms, games and minimax theorem, application to H infinity control, communication and signal processing. Prereq: MATH 3191 and 3200/3195. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5220 - Methods of Engineering Analysis**

Real sequences and infinite series, convergence of the parameter estimates in self-tuning control. Uniform convergence and application to adaptive FIR filters. Improper integrals, application in filtering, prediction and communication. Analytic functions, Hardy spaces, maximum modulus theorem. Argument principle and Nyquist stability criteria. Calculus of residues, LQG problem. Conformal mappings, Nevelinna-Pick problem. Prereq: MATH 3191 and 3200/3195, graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5230 - Advanced Linear Systems**

Mathematical description of both continuous and discrete-time systems; vector, normed and inner-product spaces; state-space, impulse response and transfer function descriptions; state-transition response matrices; eigenvalues and eigenfunctions; controllability; canonical form; state feedback; observers; realization theory. Prereq: MATH 3191, MATH 3200/3195 and permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5248 - Digital Communication Systems**

Introduces digital communication systems covering elements of information theory; mathematical representation of signals and systems; modulation and demodulation for the additive Gaussian noise channel; Performance analysis of various transmission formats; synchronization; coded waveforms; decoding algorithms; and other related topics. Prereq: ELEC 3316, 3817; recommended ELEC 4247. Cross-listed with ELEC 4248. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5249 - Space Communications Systems**

Presents the art of space communications system design around the framework of the link budget and the essential analysis tool of the radio system designer. The budget is examined from theoretical and practical viewpoints. Pointers and motivation for further study in each of the related engineering disciplines are provided. Topics to be examined include satellite orbits, propagation, antennas, noise, modulation, coding and hardware or software. Prereq: Permission of instructor and graduate standing. Cross-listed with ELEC 4249. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5250 - Information Theory**

Introduces information theory and its application in computer science, communication theory, coding and applied mathematics. Entropy, mutual information, data compression and storage, channel capacity, rate distortion, hypothesis testing. Error detecting and correcting codes, block codes and sequential codes. Prereq: ELEC 3817 or CSCI 4535 or MATH 3800. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5252 - Computer Communication Networks**

Comprehensive study of issues arising in modern computer-communication networks, both wire-line and wireless, carrying traffics with heterogeneous characteristics. A conceptual and analytical approach to the design of network protocols in harmony with the appropriate modeling of the traffic and network environments. Issues covered include routing, transmission, performance monitoring, as well as and network management in ATM multi-media networks. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5276 - Digital Control Systems**

Analysis and design of discrete-time systems, as occurs when a digital computer is used to control physical systems. Topics include difference equations, Z-transform, sampled-data system modeling, sampling, discrete equivalents, stability, and discrete control design by root locus, direct design, frequency-response, and state space. Prereq: ELEC 3316, ELEC 3817, and graduate standing. Cross-listed with ELEC 4276. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ELEC 5294 - Advanced Power Electronic Systems**

The course focuses on the design, modeling, modulation, control and simulation of three-phase two-level voltage sourced inverters with emphasis on applications. Student will also be introduced to advanced topologies including diode clamped multilevel inverters, modular multilevel inverters and matrix converters. Prereq: ELEC 4174 or ELEC 5174. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5333 - Introduction to Computational Electromagnetics**

An intro to computational electromagnetics based on the Finite Difference Time-Domain (FDTD) covering, finite difference methods, the Yee algorithm, numerical error, stability, boundary conditions, source excitations, hands-on programming experience and application of FDTD to real problems. Prereq: ELEC 3133 or grad standing. cross-listed with ELEC 4333. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5334 - Advanced Computational Electromagnetics**

This course on advanced computational electromagnetics covers Green's theorems and identities, vector potential theory, equivalence principles, numerical linear algebra, numerical integration, method of weighted residuals, integral equation methods, method of moments, and Prereq: ELEC 4133 or ELEC 5133 or grad standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5373 - Optical Engineering**

This course introduces some of the most important concepts in optical engineering and prepares students a solid foundation to apply them to applications in the industry and academic research. Prereq: ELEC 3133. Cross-listed with ELEC 4373. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5375 - Engineering Neuroscience**

In this course, mathematical models and data processing strategies will be introduced as well as other cutting-edge research techniques to help students understand how these techniques can be applied to solve modern neuroscience problems. Prereq: ELEC 3316 or graduate standing. Cross-listed with ELEC 4735 and NRSC 7674 (Anschutz Medical Campus course). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5423 - Radio Frequency Laboratory**

Projects involve modern RF analyzers, waveguide devices, time-domain techniques, characterization of devices, signal propagation and scattering, harmonic mixing, and radio frequency identification. Students will gain experience using MATLAB for data acquisition and processing. Graduate students will explore projects in greater detail. Cross-listed with ELEC 4423. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **ELEC 5433 - Fundamentals and Applications of Plasmas**

This course provides an introduction to plasmas, also known as the fourth state of matter, in nature and industry. Topics covered include single particle motions, plasma kinetic and fluid theory, cold and warm plasma models and interaction of electromagnetic waves with plasmas. Applications ranging from space sciences to medicine are explored. Prereq: ELEC 3133 for

undergraduate students or permission of the instructor. No prerequisite for CEDC graduate students. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5436 - Nonlinear Control Systems I**

Analysis and synthesis of nonlinear feedback control systems. Linearization's and stability in the small, equivalent linearization and the describing function. The dual input describing function. Stability in the large and the second method of Lyapunov. Stability of time-varying systems. Popov's method and extensions. Prereq: ELEC 4136 or 4276. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5444 - Power System Laboratory**

This lab introduces the student to modern computational tools used in power system analysis. Algorithms to solve the "power flow problem", the "economic dispatch problem", and the "optimal power flow problem" are discussed and implemented in the Matlab-Simulink mathematical analysis software package. Coreq: ELEC 4184. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **ELEC 5446 - Introduction to Modern Control Theory**

State space representation of dynamic systems. Canonical forms. Frequency domain analysis. Controllability and observability. Design by statespace methods: pole-placement, linear observers, separation principle, robustness. Linear, quadratic optimum control. Prereq: ELEC 4136 or 4276. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5455 - Computer Methods for Device Electronics**

Numerical analysis of PN junctions, Bipolar transistors, GAAS MESFETS, and MOSFETS. Numerical solution of discrete-form equations. Finite-difference method for semiconductor devices. Two-dimensional models: DC, transient, and small signal numerical analysis. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5456 - Sampled Data and Digital Control Systems**

Elements of sampling theory. Overview of design approaches via transform methods. Analysis and design in state space. Optimal control systems. Emphasis is placed on computer-aided design projects. Prereq: ELEC 4276. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5466 - Adaptive Control System Design**

Basic concepts in adaptive feedback control. Overview of application areas. Stability of non-linear systems and hyperstability approach to the design of adaptive controllers. Passivity concept and Liapunov stability. Design of model reference adaptive systems, self-tuning

regulators, stochastic adaptive, and dual control systems. Computer-based design applications. Emphasis is placed on design projects. Prereq: ELEC 4136 or 4276. Cross-listed with ELEC 4466. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5474 - Power Electronics Laboratory**

The power electronics laboratory introduces students to seven fundamental switchmode power conversion topologies, along with voltage and current feedback control, assembled on a reconfigurable power pole circuit board with external power supplies and laboratory. Cross-listed with ELEC 4474. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **ELEC 5476 - Optimal Control Systems**

Liapunov stability and quadratic optimal control problems. The minimum principle and the Pontryagin maximum principle. Variational calculus and Hamilton-Jacoby-Bellman equation. The separation principle of LQG control. Combined optimal state estimation and control. Differential and difference Riccati equations. Tracking and disturbance rejection. Computer-aided design applications. Prereq: ELEC 4136 or 4276. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5486 - Modeling and System Identification**

Linear time-invariant and time-varying models. Nonlinear state space models. Non-parametric methods. Parameter estimation methods. Convergence and consistency. Computational methods in estimation. Recursive estimation methods. Experiment design and choice of identification criterion. Model structure selection and model validation. Prereq: ELEC 3817 or MATH 3800, and ELEC 4136 or 4276. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5496 - Robust Control**

Background mathematics: function spaces and operators, and factorization theory. Stability theory: stability and stabilizability parameterization, closed-loop transfer matrices. Model-Matching Theory: solution existence, SISO Design, the Nehari problem. Performance bounds. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5501 - Microprocessor-Based Design**

Covers advanced treatment of embedded system design using microprocessors. Analog input circuitry is interfaced to a microprocessor, and a PC board layout is created to develop a complete system design. Software/Operating System is implemented for realtime I/O. Prereq: Graduate standing or permission of instructor. Cross-listed with ELEC 4501. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ELEC 5511 - Hardware-Software Interface**

Computer engineering methods in hardware and software design applied to problems drawn from the mini- and micro-computer systems field. Hardware and software techniques for the design of combined hardware or software are developed. Interface and real-time programming techniques are considered. Graduate level requires additional projects and homework. Prereq: Graduate standing or permission of instructor. Cross-listed with ELEC 4511. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ELEC 5521 - Design and Test of Digital Systems**

Application of hardware description languages to the design, synthesis, analysis, and testing of digital and computer systems; modeling and simulation constructs; modern hardware description languages, including VHDL, logic and behavioral synthesis; rapid-prototyping; FPGA and standard-cell ASIC design; design for testability; and electronic design automation. Prereq: ELEC 3651 or graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ELEC 5522 - VLSI Systems**

Examines the design of very large-scale integrated (VLSI) systems from the logic to physical levels, including MOS transistor design, CMOS fabrication and design rules, device and wafer processing, inverter and complex gate design, mask level layout, VLSI system components and architectures, algorithms for VLSI computer-aided design, and testability. Prereq: ELEC 3215 and 3651 or graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ELEC 5551 - Pattern Recognition**

Pattern recognition techniques from image processing and artificial intelligence are explored. Topics include neural networks, morphological processing, wavelets, fractals, and basic image understanding. Prereq: ELEC 3316 and 3651. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ELEC 5555 - VLSI Circuit Simulation**

Computer methods for large integrated circuits. Theory and practice of VLSI circuit simulation. Nodal formulations of networks. Computer generation of sensitivities. Modeling active devices. DC solution of nonlinear networks. Prereq: Graduate standing or permission of instructor. Cross-listed with ELEC 4555. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ELEC 5617 - Random Processes for Engineers**

Probability, sequences of random variables, specification of stochastic processes, stationarity, correlation functions and spectral densities, linear mean-square estimation, central limit theorems, law of large numbers, non-stationary random processes, stochastic differential

equations and Karhunen-Loeve expansion, Kalman filtering. Prereq: ELEC 3316 and ELEC 3817 and permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5627 - Stochastic Point Processes**

Presents modeling physical phenomena characterized by highly localized events distributed randomly in a continuum. Applications include optical communications, queuing theory, decision theory, nuclear medicine and electron microscopy. Topics include Poisson counting processes and its generalizations; stochastic differential equations used in filtering; martingales and Brownian motion. Prereq: ELEC 3817 or ELEC 5617. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5637 - Digital Signal Processing**

Discrete-time signals and systems in the time and frequency domain. Digital filter structures, design of FIR filters by windowing, optimum approximations of FIR filters. Design of digital IIR filters from continuous time domain. Computer-aided design of digital filters. The discrete Fourier transform and DSP algorithm implementation. Analysis of finite word length effects. Application of digital signal processing. Prereq: ELEC 3316 and 3817. Cross-listed with ELEC 4637. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5638 - Digital Image Processing**

Basics of two-dimensional (2-D) systems theory, including 2-D Fourier transform, Z-transform, and difference equations. Design of 2-D filters for image processing applications. Image transforms, including the 2-D FFT, cosine, Hadamard and KL. Image enhancement and restoration techniques. Method of image coding and compression. Prereq: ELEC 3133, 3215, 3225, 3316, 3817 or graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5644 - Introduction to Biomedical Imaging**

An important component of the recent expansion in biomedical engineering is the area of biomedical imaging. This ELEC 4644/5644 course is an introduction to biomedical imaging systems, not only covering the fundamentals of imaging physics but also the applications of four primary biomedical imaging modalities: X-Ray Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Nuclear Medicine (i.e. PET, SPECT), and Ultrasound Imaging. Prereq: Graduate standing, or permission of instructor. Cross-listed with ELEC 4644. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5647 - Adaptive Signal Processing**

Optimal filtering and identification of signal processing models. Martingales and analysis of recursive estimation algorithms. LMS and RLS adaptive filters. Stability, convergence and robustness of adaptive algorithms. Adaptive noise cancellation, time delay estimation and blind

equalization. Adaptive differential pulse code modulation, adaptive prediction, adaptive Kalman Filters. Applications and implementation of adaptive algorithms. Prereq: ELEC 5637. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5648 - Blind Signal Processing**

Introduction to gradient optimization methods. Introduction to adaptive filtering. Principal component analysis and whitening. Robust and adaptive PCA. Blind SOS parameter estimation and deconvolution. Fundamentals of independent component analysis. Blind equalization of SIMO and MIMO systems. ICA by maximization of nongaussianity. ICA by MLE and minimization of mutual information. Applications and practical considerations. Prereq: Graduate standing. Cross-listed with ELEC 6648. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5657 - Detection and Estimation Theory**

Introduces detection and extraction methods used in signal processing, including decision theory; detection of known and random signals; optimum receiver design; estimation theory; Wiener filtering; Kalman-Bucy filtering; and applications to communication systems. Prereq: ELEC 5617. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5667 - Wavelet Theory and Applications**

Topics include: fundamentals of signal decomposition; theory of filter banks; multi-resolution analysis and fast wavelet transforms; applications image and video image and video compression; and denoising and feature detection. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5678 - Quantum Electronics**

The course teaches students to understand the basic concepts of quantum mechanics and to learn the mathematical tools needed and to be familiar with some of the technical knowledge that applies quantum mechanics to various advanced problems in engineering. Prereq: PHYS 2331 and MATH 3195. Cross-listed with ELEC 4678. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5687 - Optical Communication Systems**

System aspects of optical communication system design. Basic principles of sources, channels, detectors, counting statistics, amplifiers, and coding with regard to the performance limitations they place on the communication system. Prereq: ELEC 3133. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5688 - Introduction to Nondestructive Testing**



A basic, broad understanding of the principles of nondestructive testing and evaluation is provided. The main objective of this course is to attract students to NDT fields and eventually help address the increasing needs of NDT engineers and technicians. Interaction and collaboration with local NDT industries will also be emphasized. As an introductory course, a broad interdisciplinary knowledge of NDT will be covered in the following sub-areas: Visual, Penetrant, Magnetic Particle, Eddy Current, Microwave, Ultrasonic, and Radiography. Prereq: Graduate standing, or permission of instructor. Cross-listed with ELEC 4688. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5697 - Optical and Spatial Information Processing**

Processing of two- and three-dimensional spatial information. The scalar diffraction theory necessary to describe the information-bearing wave-front. Wave-front recording, modulations, and reconstruction. Holography, Fourier transform properties of lenses, two-dimensional convolution and correlation, pattern recognition, and optical information processing. Prereq: ELEC 3316. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5710 - Advanced Electric Drive Systems**

Covers advanced theory and implementation techniques for rotating electric machinery drives. Topics include field oriented control theory, detailed dynamic modeling of induction machine/drive system, advanced control algorithms and controller design. Prereq: ELEC 4164/5164 or equivalent. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5714 - Energy Systems Analysis**

Transmission line constants, including details of GMD methods, skin effect. Analysis of balanced and unbalanced line using distributed parameters, energy flow from circle diagram approach, traveling-wave phenomena, corona, power cables and fundamentals of DC transmission. Prereq: ELEC 4184. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5720 - Practical Electric Drive Systems**

Covers practical control theory and implementation techniques for electric machine drives for rotating electric machinery using high-performance hardware and software. Topics include machine theory review, power converter, control theory, controller design and actual implementation of an induction machine drive using up-to-date microcontroller hardware and software. Prereq: ELEC 2520, ELEC 4164/5164 or equivalent. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5723 - High Performance Computer Architecture**

High Performance Computer Architecture covers the design of advanced computing systems. In particular, the course includes the design of modern microprocessors, characteristics of the

memory hierarchy, and issues involved in multithreading and multicore architectures. Prereq: ELEC 3651 Digital Hardware Design. Cross-listed with ELEC 4723. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ELEC 5725 - Advanced Electric Machinery**

Covers theoretical principles and techniques of electric machine analysis focusing on rotating machinery. Topics include various machine definitions, properties and analysis, software tools, and examples. Prereq: ELEC 3164 or equivalent. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5727 - Computer Vision & Image Processing Acceleration**

Real-time constraints on computer-vision and image processing applications have motivated numerous explorations of multicore architectures to provide more efficiency through hardware parallelism and acceleration. This course undertakes the study of image processing and computer vision algorithms in the context of parallel hardware. Cross-listed with ELEC 4727. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5755 - Renewable Energy Systems**

This course focuses on the modeling, analysis and control of grid-connected wind and photovoltaic energy systems. Prereq: permission of instructor. Cross-listed with ELEC 4755. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ELEC 5764 - Power Distribution Systems**

Use of per-unit methods to find transient voltage behavior of industrial power systems resulting from motor starting, spotwelders and similar stimuli. System and device responses due to series and shunt capacitors and problems of subharmonics and over-excitation on induction motors. Design of power distribution systems. Prereq: ELEC 4184. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5774 - Power Systems Dynamics and Protection**

Topics to be covered include: power system dynamic fundamentals, various stability problems, such as angle, frequency and voltage stability; protection of power systems apparatus and protective relays coordination. Prereq: ELEC 4184/5184 or graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 5800 - Special Topics**

Intermediate courses of variable title and variable credit, usually offered once by guest lecturers. See current departmental notices for details. Repeatable. Max Hours: 9 Credits.  
**Semester Hours:** 1 to 3

### **ELEC 5840 - Independent Study: ELEC**

Offers the opportunity for independent, creative work. Prereq: Permission of instructor. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **ELEC 5939 - Internship Master Student**

Student will outline internship tasks every 2-3 weeks in a progress report. Reports will include the details of exposure to electrical/computer engineering concepts. Each concept will be described with respect to CU Denver Electrical Engineering degree program. Courses that were taken pre-internship that prepared student for successful understanding for the task requirements. In addition, preparations that would be help, will also be mentioned. Engineering training in design and software tools related to internship tasks will be clearly described. Final semester report will describe all experiences and include recommendations on how students might prepare to be successful for other common tasks. Requisite: Graduate students must have completed 6 credit hours with a cumulative GPA of 3.0. Repeatable. Max Hours: 3 Credits.  
**Semester Hours:** 1 to 3

### **ELEC 5980 - Statistical Quality Control**

Introduces statistical methods of quality control. Statistical process control, process capability, statistical design of experiments and total quality management. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 6000 - Statistical Signal Processing**

The objective of this course is to present a systematic coverage of statistical signal processing methods which are fundamental for processing, identifying and classifying stochastically (randomly) generated data sequences. Emphasis will be given to methods which resist data outliers. Important applications include communications and biological systems. Prereq: ELEC 5617 or consent of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ELEC 6800 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ELEC 6950 - Master's Thesis**

Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

### **ELEC 6960 - Master's Report**

Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

### **ELEC 7800 - Special Topics**

Courses of variable title and variable credit, usually offered once by guest lecturers. See current departmental notices for details. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ELEC 7801 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ELEC 7802 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ELEC 7803 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ELEC 7804 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ELEC 7805 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ELEC 7806 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ELEC 7807 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ELEC 7808 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ELEC 7809 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ELEC 7840 - Independent Study: ELEC**

Offers the opportunity for independent, creative work. Prereq: Permission of instructor. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **ELEC 8990 - Doctoral Dissertation**

Repeatable. Max hours: 10 Credits. **Semester Hours:** 1 to 10

## **Engineering**

### **ENGR 1000 - Introduction to Engineering**

Introduces engineering profession, engineering design and practice; and the tools used by engineers to accomplish design. The specialties within engineering are described. Students are involved in application projects and use word processors, spreadsheets and engineering software. Note: ENGR 1000 cannot be substituted for ELEC 1201. Prereq: High school trigonometry. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 1

### **ENGR 1111 - Psychological and Social Implications of Technology**

This course will explore the impact of technology and its advances on human beings from an emotional, psychological, and social perspective. Discussions will include ethical, moral, and multicultural implications of technological advances from a global perspective and will require students to critically analyze issues that arise from such advances. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ENGR 1130 - Chemistry for Engineers**

An introductory lecture and recitation course designed to meet the general chemistry requirement for engineering students. Topics include atoms, molecules, moles, stoichiometry, chemical bonding, atomic & molecular structures, thermodynamics and kinetics. The course will highlight the application of chemistry to engineering disciplines. Note: Suggested background of one year of high school chemistry or CHEM 1000 and MATH 1110 (or high school equivalent) strongly recommended. Max hours: 5 Credits. **Semester Hours:** 5 to 5

### **ENGR 1208 - Special Topics**

Restriction: Restricted to Engineering and pre-engineering students only. Repeatable. Max hours: 9 Credits. **Semester Hours:** 3 to 3

### **ENGR 1218 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 1228 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 1238 - Special Topics**

Repeatable. Max hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 1248 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 1258 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 1268 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 1278 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 1288 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 1298 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 2208 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 2218 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 2228 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 2238 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 2248 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 2258 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 2268 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 2278 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 2288 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 2298 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 3208 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 3218 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 3228 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

**ENGR 3238 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 3248 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 3258 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 3268 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 3278 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 3288 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 3298 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 3400 - Technology and Culture**

Explores the cultural and political foundations of technology and the impact of technology upon the individual and society. Contributions to technological advances and the impact of technology on women and diverse ethnic groups are examined in the context of specific engineering designs and case studies. Prereq: One course in social sciences, one course in humanities, one course in science. (Satisfies the multicultural diversity requirement of the UCDHSC core curriculum). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGR 3600 - International Dimensions of Technology and Culture**

This course provides students with an understanding of how science, technology and international issues interrelate in a world that has become more interconnected and interdependent. The course will focus on the technical, organizational and cultural aspects of information and other technologies with an emphasis on their impact on third world countries. Prereq: One course in social sciences, one course in humanities, one course in science. (Satisfies the international perspectives requirement of the UCDHSC core curriculum). Max hours: 3 Credits. **Semester Hours:** 3 to 3



### **ENGR 3995 - Global Technology, Business & Culture**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ENGR 4150 - Seminar: Special Topics in Engineering**

A flexible seminar format dealing with topics of special interest in engineering. Topics vary from semester to semester. Prereq: Senior standing. Cross-listed with ENGR 5150 and 7150. Max hours: 1 Credit. **Semester Hours:** 0 to 1

### **ENGR 4208 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 4218 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 4228 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 4238 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 4248 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 4258 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 4268 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 4278 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 4288 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 4298 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 4800 - Science Engineering and Culture for Undergraduates**

Course for undergraduate international and limited English proficient (LEP) students to improve success in science and engineering degree programs through senior research paper writing , advanced STEM English skills and cross cultural training. Repeatable. Max Hours: 6 Credits.

**Semester Hours:** 3 to 3

### **ENGR 4840 - Independent Study**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 5150 - Seminar: Special Topics in Engineering**

A flexible seminar format dealing with topics of special interest in engineering on a graduate level. Topics vary from semester to semester. Prereq: Graduate standing. Cross-listed with ENGR 4150 and 7150. Max hours: 1 Credit. **Semester Hours:** 0 to 1

### **ENGR 5208 - Special Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGR 5301 - Systems Engineering: Principles and Practice**

Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGR 5302 - Systems Engineering: Planning and Management**

Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGR 5303 - Special Topics: Systems Engineering**

Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **ENGR 5800 - Long Range Infrastructure Planning and Design: Colorado 2050**

The goal of this course is to equip students to address the problems of long term future resource limitation and its influence on urban infrastructure in Colorado. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

## **ENGR 7150 - Seminar: Special Topics in Engineering**

A flexible seminar format dealing with topics of special interest in engineering on an advanced graduate level. Topics vary from semester to semester. Prereq: Graduate standing. Cross-listed with ENGR 4150 and 5150. Repeatable. Max Hours: 1 Credit. **Semester Hours:** 0.5 to 0.5

## **English**

### **ENGL 1010 - Writing Workshop**

Focuses on the abilities and skills needed to write effective expository prose. Emphasizes frequent writing, both in and out of class, with special attention to writing short essays well. Writers learn to write confidently at the sentence and paragraph levels, and to develop their grammatical and mechanical skills. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 1020 - Core Composition I**

Provides opportunities to write for different purposes and audiences, with an emphasis on learning how to respond to various rhetorical situations; improving critical thinking, reading, and writing abilities; understanding various writing processes; and gaining a deeper knowledge of language conventions. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-C01. **Semester Hours:** 3 to 3

### **ENGL 1111 - First Year Seminar**

Restriction: Restricted to Freshman level students. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **ENGL 1601 - Storytelling: Literature, Film, and Television**

Asks students to explore how stories determine who we are. Everything people do fits into a narrative pattern, evident everywhere from TV news to memory to daily schedules. We tell ourselves stories about ourselves and others--how do these stories shape who we are as cultural beings? Note: this course assumes that students have completed or are currently taking ENGL 1020. Term offered: fall, spring. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-AH2. **Semester Hours:** 3 to 3

### **ENGL 2030 - Core Composition II**

Focuses on academic and other types of research-based writing and builds on the work completed in ENGL 1020. Focuses on critical thinking, reading and writing as well as working

with primary and secondary source material to produce a variety of research-based essays. Emphasis on using both print-based and electronic-based information. Prereq: ENGL 1020. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-C02. **Semester Hours:** 3 to 3

### **ENGL 2060 - Introduction to Writing & Digital Studies**

Introduces students to the topics of study in the English Writing major. Topics include writing studies (literacy, genre, research, and multimodality), rhetoric (history and theory), and the teaching of writing (pedagogy and practice). Prereq: ENGL 1020. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 2070 - Grammar, Rhetoric and Style**

Teaches the basics of English grammar in order to develop a rhetorical and stylistic confidence in reading and writing, using an approach that is more descriptive than prescriptive. Teaches students how to evaluate the grammatical choices of established writers and how to develop flexibility in the grammatical choices they make in their own writing. Note: this course assumes that students have completed ENGL 1020. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 2156 - Introduction to Creative Writing**

Reading, discussing, writing short fiction and poetry in a workshop setting. Note: this course assumes that students have completed ENGL 1020. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 2250 - Introduction to Film**

Introduces students to the critical study of cinema as an art form and a cultural phenomenon. Topics include cinematography, editing, mise-en-scene and sound; the connections between cinema and related art forms; film genres; the social dimensions of film production and reception; and films by such key filmmakers as Alfred Hitchcock, Maya Deren and Spike Lee. Term offered: fall, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 2450 - Introduction to Literature**

Provides the terms and skills for analyses of a variety of narratives. Develops critical thinking, reading, and writing necessary for succeeding in the discipline. Note: this course assumes that students have completed ENGL 1020. Note: required introductory course for English majors and English education. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 2520 - The Bible as Literature**

Introduces students to biblical literature. Selections from the various genres of writing in Hebrew (history, wisdom, prophecy, literature) are read and discussed, as well as representative sections from the New Testament, including the gospels and the writings of Paul. Cross-listed with RLST 2700. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 2600 - Literary Classics**

Traces the traditions of British and American literature from medieval times to the present, by examining a variety of texts, studying the impact of different time periods, and cultural movements on the evolving literary tradition. Term offered: fall, spring. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-AH2. **Semester Hours:** 3 to 3

### **ENGL 2840 - Independent Study: ENGL**

Term offered: fall, spring. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **ENGL 3001 - Critical Writing**

Introduces literary theory to provide extensive practice in writing about literature. Note: Required of English majors and minors with a literature option and education English majors. Prereq: ENGL 2450 with a C- or higher. Restriction: Restricted to English majors only (all ENGL subplans). Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3020 - Poetry Workshop**

Practical workshop for developing poetic craft, focusing on writing process and specialized topics. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3050 - Fiction Workshop**

Beginning workshop for defining and developing narrative craft, focusing on writing process and specialized topics. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3070 - Film History I**

Examines the history of cinema from its 19th-century origins until the early sounds era. Explores important developments and influences in American and international cinema, including the origins of Hollywood narrative, avant-garde cinema, German Expressionism, and Soviet Cinema. Prereq: Sophomore standing. Cross-listed with HIST 3070. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3075 - Film Genres**

An intensive study of films of one or more significant genres, such as comedy, film noir, science fiction. Prereq: Sophomore standing. Note: May be taken more than once when genres vary. Term offered: fall, spring. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ENGL 3080 - Global Cinema**

Studies topics in international cinema, with particular attention to native production in Latin America, Africa, the Middle East, and Asia. Prereq: Sophomore standing. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3084 - Multimedia Composition**

Offers students opportunities to examine and compose texts where language is integrated with other media, such as video, still images, music, etc. Includes basic instruction in digital multimedia composition and design tools. ENGL 2070 recommended. Prereq: Junior standing or higher. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3085 - Film Directors**

An intensive study of the films of one or more major directors, such as Chaplin, Keaton, Hitchcock, Welles, Coen Brothers. Prereq: Sophomore standing. Note: May be taken more than once when directors vary. Term offered: fall. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ENGL 3106 - Writing for Print Media**

Interested in writing for newspapers, magazines, or new media? Get real-world and practical experience with this introduction to working in modern journalism. Students will work closely with the CU Denver student newspaper "The Sentry", have the chance to get their writing published, and get involved with student media. It's the best way to start writing professionally: with hands-on training. No previous experience necessary--just a passion for journalism and a desire to see your work in print! Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3154 - Technical Writing**

Introduces the study and writing of technical documents. Emphasizes the processes, style, structure, and forms of technical writing. Attention is paid to audience analysis, organization, clarity and precision. ENGL 2070 recommended. Prereq: Sophomore standing. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3160 - Language Theory**

Provides a basic introduction to linguistics and language theory, including phonetics, grammar, semantics, pragmatics, sociolinguistics, cognitive processing, and language acquisition. Includes practical applications of the theories and methodologies presented. ENGL 2070 recommended. Prereq: Sophomore standing. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3170 - Business Writing**

Focuses on the strategies and techniques of business writing, with emphasis on reader, message and form. ENGL 2070 recommended. Prereq: Sophomore standing. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3200 - From Literature to Film**

Explores the relationship between literature and cinema; the process of adapting and transforming a novel into a feature-length film; and the historical, cultural, and commercial influences that shaped the creation of each novel and film studied. Prereq: Sophomore standing. Term offered: fall, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3330 - Topics in Literature**

Courses supplement the department's regular course offerings. Recent topics have included Tolkien and international short stories. Prereq: Sophomore standing. Note: Open to both majors and non-majors. Can be taken more than once when topics vary. Term offered: fall, spring. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ENGL 3405 - Topics in Writing**

Term offered: fall, spring. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ENGL 3416 - Magazine Writing**

An intensive, practical course in writing non-fiction with an emphasis on journalistic approaches for daily, weekly, and monthly publications. Prereq or Co-req: ENGL 2030. Term offered: spring, summer. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3450 - Contemporary Women Writers**

Examines how women write about a specific theme, such as home, work, family, the "Other," as well as how women's writing may differ from men's. Theme and genre vary. Prereq: Sophomore standing. Cross-listed with WGST 3450. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3480 - Modern Drama**

How does drama change from the pioneering realism of Ibsen and Chekhov to the Absurdism of Ionesco and Pinter and beyond? The course covers plays in English and translation from the late nineteenth to the twenty-first century, with attention to performance as well as literary texts. Prereq: Sophomore standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3520 - Religious Narratives**

Investigates the language and structure of religious discourse in Western literature. Welcomes interdisciplinary and comparative perspectives with a focus on cultural constructions of the sacred. Prereq: Sophomore standing. Cross-listed with RLST 3720. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3661 - Shakespeare**

Introduces some of Shakespeare's major plays and poems, which usually includes Richard II, Romeo and Juliet, Measure for Measure, Othello, King Lear, Anthony and Cleopatra and The Tempest. Prereq: Sophomore standing. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3700 - American Literature to the Civil War**

Surveys American literature from the colonial era to the Civil War. Note: this course assumes that students have completed ENGL 1020. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3750 - American Literature after the Civil War**

Surveys American literature from the Civil War to the contemporary era. Note: this course assumes that students have completed ENGL 1020. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3795 - Race and Ethnicity in American Literature**

Focuses alternately on one of several ethnic American literary traditions (e.g. African American, Chicano) and their historical, geographical, social and economic communities. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3798 - International Perspectives in Literature and Film**

Fosters an understanding of peoples outside of the U.S. through the study and appreciation of non-western literature. Investigates how historical, cultural, and ideological forces constitute race, ethnicity, nationalism, and alienation in a single country or across a region. Topic and country/region varies by semester. Note: May be repeated for credit when title and content are



different. All texts in English translation. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 3840 - Independent Study: ENGL**

Prereq: Sophomore standing. Term offered: fall, spring. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **ENGL 3939 - Internship**

Employment situations designed and supervised by members of the faculty; concepts and skills developed in the classroom are used in business and public service contexts. Prereq: Junior standing or higher. Before enrolling, students should contact the Career Center. Note: Up to six hours may be counted toward the major. Note: students must work with the Experiential Learning Center advising to complete a course contract and gain approval. Term offered: fall, spring. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **ENGL 4000 - Studies of Major Authors**

An intensive study of works of one major British or American author. Examples: Dickens, Woolf or James. Prereq: Sophomore standing. Cross-listed with ENGL 5000. Term offered: fall, spring. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 3 to 3

### **ENGL 4025 - Advanced Poetry Workshop**

Advanced poetic craft, including exercises in mode, genre and advanced revision. Prereq: ENGL 3020. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4055 - Advanced Fiction Workshop**

Advanced workshop for developing and deepening narrative craft, focusing on writing process and specialized topics. Prereq: ENGL 3050, English major and minor only; all others must obtain permission of instructor. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4088 - Literary Editing: Copper Nickel**

Literary editing in theory and practice, using UCD's nationally recognized journal "Copper Nickel." Topics may include evaluating fiction, poetry and nonfiction; design and aesthetics; line editing; the business of literary journals. Prereq: ENGL 3020 or 3050. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4160 - Poetics**

"Mechanics" of poetry in English, including meter, rhythm, rhyme, line, and other systems of measurement and logic. Emphasis is on historical development of poetic art in English. Note: this course assumes that students have completed ENGL 2450. Cross-listed with ENGL 5160. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4175 - Writing in the Sciences**

Provides rhetorical analyses of scientific discourse and student practice in writing research reports and proposals. Prereq: Sophomore or higher standing and ENGL 2030 with a C- or higher. Cross-listed with ENGL 5175. Students will not receive credit for this class if they have already received credit for ENGL 3175. Term offered: fall, spring. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **ENGL 4177 - Technical Editing**

Provides instruction in the conventions of editing in the genre of technical communication. Students develop skills they can use to edit a variety of technical documents. Prereq: ENGL 2030 with a C- or better. Cross-listed with ENGL 5177. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4180 - Argumentation and Logic**

Explores the history of logic and its role in argumentation, studies various types of logical structures, and analyzes current uses of argumentation, with attention to writing arguments on current public issues. ENGL 3084 recommended. Prereq: Students must have junior standing/60 units of credit completed. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4190 - Advanced Topics in Writing & Digital Studies**

Focuses on particular issues in rhetoric and writing as they pertain to reading and writing, including language and gender, language and culture, and language of political action. ENGL 3084 recommended. Prereq: Must have completed 60 semester hours. Cross-listed with ENGL 5190. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ENGL 4200 - Survey of the English Novel to 1900**

Rise and development of the English novel from its beginnings in the 18th century through the end of the 19th century, including such writers as Defoe, Fielding, Austen, Shelley, the Brontes, Thackeray, and Dickens. Prereq: Sophomore standing. Cross-listed with ENGL 5200. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4230 - The American Novel**

Surveys major developments in the American novel from the 18th century to the 21st century. Prereq: Sophomore standing. Cross-listed with ENGL 5230. Term offered: spring, summer. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4235 - Faulkner**

Studies the works of Faulkner's high period with special attention to southern themes and Faulkner's experimentation with narrative form. Prereq: Sophomore standing. Cross-listed with ENGL 5235. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4236 - The American Short Story**

Traces the development of the short story in the United States, from its beginnings in colonial tales to its contemporary renaissance as a dominant literary form. Prereq: Sophomore standing. Cross-listed with ENGL 5236. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4250 - Twentieth Century Fiction**

Deals with novels originating in a variety of countries in an effort to see the similarities and differences that varying nationalities bring to the genre. Prereq: Sophomore standing. Cross-listed with ENGL 5250. Term offered: spring. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4280 - Proposal and Grant Writing**

Focuses on research, design, composition, and editing original proposals. Includes idea development, identification of funding sources, and the creation of persuasive documents. ENGL 3084 recommended. Prereq: Students must have junior standing/60 units of credit completed. Cross-listed with ENGL 5280. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4300 - History of British Drama**

Intended as a survey of British drama from the miracle plays of the medieval period, through the Renaissance and Restoration, to the "kitchen sink" realists of the 1960s. Prereq: Sophomore standing. Cross-listed with ENGL 5300. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4306 - Survey of Feminist Thought**

Examines changes and continuities in feminist thought from the 18th century to the present, using historical and literary materials. Explores the ways that women's characteristics, experiences, and capabilities have been understood and challenged. Cross-listed with ENGL

5306, HIST 4306, 5306, WGST 4306, 5306. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4308 - Contemporary Feminist Thought**

This course explores contemporary feminist thought in philosophy and literature in the 20th and 21st centuries. Topics include lesbianism, black feminism, Chicana feminism, transgender identity, women and work and others. Cross-listed with ENGL 5308, PHIL 4308, PHIL 5308, WGST 4308, WGST 5308. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4420 - Film Theory and Criticism**

(1) Familiarizes students with some of the central concepts and debates in film theory and criticism, both classic and contemporary, (2) enables students to develop advanced analytic and interpretive skills, and (3) guides students toward discovering and articulating original critical and theoretical perspectives. Note: this course assumes that students have completed ENGL 2250, ENGL 3070, ENGL 3080. Cross-listed with ENGL 5420. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4460 - Contemporary World Literature**

Surveys literature written by world writers since World War II. Prereq: Sophomore standing. Note: Texts read in English. Cross-listed with ENGL 5460. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4500 - Medieval Literature**

Introduces representative writers from the Norman Conquest to about 1550. Emphasis on a variety of genres, including religious poetry, Arthurian romance, dream vision and drama. Prereq: Sophomore standing. Cross-listed with ENGL 5500. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4510 - Whores and Saints: Medieval Women**

Studies how women are presented in texts, as well as works by women. Investigates the roles open to women and societal attitudes toward women, who were considered seductresses, saints, scholars and warriors in the middle ages. Note: this course assumes that students have completed at least 9 hours of literature coursework. Cross-listed with ENGL 5510, RLST 4730/5730, WGST 4510/5510. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4520 - English Renaissance**

Introduces some of the important writers in this major period of English literature (1500-1660). Special attention to the works of Sidney, Milton, Spenser, Shakespeare, Donne, Herbert and Johnson. Prereq: Sophomore standing. Cross-listed with ENGL 5520. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4530 - Milton**

Extensive reading in John Milton's poetry (Lycidas, Paradise Lost, Paradise Regained, Samson Agonistes) as well as his political, social and theological writings. Prereq: Sophomore standing. Cross-listed with ENGL 5530. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4560 - English Romanticism**

Studies major works of the chief English writers of the first part of the 19th century, with emphasis on such representative figures as Wollstonecraft, Godwin, Blake, Wordsworth, Coleridge, Hazlitt, Byron, Keats and Shelley. Prereq: Sophomore standing. Cross-listed with ENGL 5560. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4600 - Modernism**

Modernist literature from the beginning of the 20th century through World War II, including such writers as Eliot, Joyce, Forester, Ford, Yeats, Woolf and Barnes. Examines the social-political influences as well as the aesthetic and stylistic elements which define modernist writing. Prereq: Sophomore standing. Cross-listed with ENGL 5600. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4601 - Principles and Practices of Second Language Acquisition**

Overview of basic principles and practices in the learning and teaching of English as a second language. ENGL 3160 recommended. Prereq: Students must have junior standing/60 units of credit completed. Cross-listed with ENGL 5601. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4651 - Second Language Writing**

Topics include: similarities between first & second language writing, the processes of composition & revision, teacher response to student writing, student processing of feedback, writing assessment, and the reading/writing connection. ENGL 3160 recommended. Prereq: Students must have junior standing/60 units of credit completed. Cross-listed with ENGL 5651. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4720 - Honors in English**

Designed for students taking departmental honors in English. Prereq: Students must have written permission from the honors advisor. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4730 - Chaucer**

Extensive reading in Chaucer's works in Middle English, including his lyrics, dream visions, Troilus and Criseyde, and the Canterbury Tales. Examines sources, historical and ideological factors influencing the texts. Prereq: Sophomore standing. Cross-listed with ENGL 5730. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4740 - Honors in Writing**

Designed for students taking departmental honors in English writing. Prereq: Student must have written permission from honors director and faculty advisor. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4755 - Illness & Disability Narrative**

Narratives of mental, chronic or terminal illness, and disability have become common over the past decades. There are a number of ways in which these stories are told by those reflecting on their experiences: individuals choosing to tell such stories must consider how their stories will be received and what they are revealing about themselves in dealing with their conditions. Many issues arise when looking at the production and reception of these narratives, including acceptance and assimilation, stigmatization, access and quality of treatment, discrimination, accommodation, pity and stereotyping responses. These narratives are consumed, usurped, and reacted to by clinicians, communities and society at large with their own agendas, expectations, fears and judgments of the stories and of the individuals telling their stories. This course is about the issues and concerns of producing an illness or disability narrative and the consumption/reception of those narratives by health professionals, communities, and society at large. Pre-req ENGL 1020 and 2030 with a C or higher. In addition, English majors are required to have taken ENGL 3001, 3084, or 4701, and HEHM minors using this as their capstone are required to have taken HEHM 3100 with a C or higher. Cross listed with ENGL 5755. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4770 - Topics in English: Film and Literature**

May look at specific genres, aesthetic approaches to literature, ideological or socio-political agendas, or other special topics in literature and/or film. Prereq: Sophomore standing. Cross-listed with ENGL 5770. Term offered: spring, fall. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 3

### **ENGL 4800 - Special Topics in Creative Writing**

Writing-intensive courses combining reading, directed writing, peer- and instructor-led workshops in a topic to be determined by instructor. Topics may include projects in a specialized genre, such as science fiction or noir writing, or in a field of professional endeavor related to creative writing, such as the editing and production of a literary journal. Note: this course assumes that students have completed ENGL 2154. Term offered: fall. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **ENGL 4820 - Senior Poetry Workshop**

Capstone workshop for students within the Creative Writing major track or Creative Writing minor. Emphasis on a single, sustained project developed by the student. Prereq: ENGL 4025. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4840 - Independent Study: ENGL**

Term offered: fall, spring. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **ENGL 4850 - Senior Fiction Workshop**

Capstone workshop designed to deepen the understanding of narrative, and consciously apply the strategies of narrative craft to modern markets. Course will focus on the writing and publishing processes, culminating in a classroom narrative defense and submission to professional outlets. Prereq: ENGL 4055. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Term offered: fall, spring. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **ENGL 4990 - Senior Writing Project in Creative Writing or Film Studies**

Individual writing project consisting of a creative manuscript or critical study. Manuscript must be 30 pages of high quality text. Note: Available only to students in the creative writing and film tracks. Prereq: Senior standing. Term offered: fall, spring. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ENGL 4995 - Senior Writing Project**

Individual writing project in any genre and any discipline upon approval of faculty advisor. Manuscript must be 30 pages of high quality text. Prereq: Senior standing. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5000 - Studies of Major Authors**

An intensive study of works of one major British or American author. Examples: Dickens, Woolf or James. Prereq: Graduate standing. Cross-listed with ENGL 4000. Term offered: fall, spring. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 3 to 3

## **ENGL 5001 - Special Topics**

This variable credit course offers intensive study of the teaching of writing in a collaborative action-oriented approach. Prereq: Graduate standing. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

## **ENGL 5080 - History of the English Language**

Examines how English has changed since A.D. 800 through examples of writing from different periods, with attention to the way various groups have enriched our vocabulary and altered our syntax. Note: this course assumes that students have completed ENGL 2070 or one year of college level coursework in a foreign language. Prereq: Graduate standing. Cross-listed with ENGL 4080. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5093 - Teaching of Writing**

Deals with the analysis of rhetorical theory with an emphasis on practical applications in the classroom, with attention to alternative pedagogies in teaching. Prereq: Graduate standing. Term offered: summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5100 - Introduction to Graduate Studies**

Introduces students to scholarly methods & key debates in English Studies. Familiarizes students with department's specializations in film, linguistics, literature & rhetoric. Offers new MA students training in the primary forms of scholarly writing within the discipline (journal article, conference abstract, synopsis, book review). Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5110 - Denver Writing Project**

An intensive extended workshop in the development of one's personal and professional writing and in the teaching of writing. Open to those who are members of the Denver Writing Project. Prereq: Graduate standing. Term offered: summer. Max hours: 9 Credits. **Semester Hours:** 3 to 9

## **ENGL 5120 - Denver Writing Project Advanced Institute**



Advanced institutes provide intensive examination of an issue related to the teaching of writing. The specific issues are of two kinds--repeatable ones such as "Alumni Institute" and "Writing Retreat" and variable, such as "Action Research" and "Writing Across the Curriculum." Prereq: Graduate standing. Term offered: summer. Repeatable. Max Hours: 9 Credits.

**Semester Hours:** 1 to 1

### **ENGL 5135 - English Language Study**

Introduces students to varieties of English in use today, while tracing range of "new Englishes" back to origins of language. Students will develop an understanding of English as a global language, why it spread throughout the world and how, paying specific attention to print history of English and relationship to other print languages. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5140 - Special Topics with NWP**

This online University of Colorado Denver English Department and Denver Writing Project course will focus on teaching argument writing to grades 3 - 12+ with the National Writing Project's College, Career, and Community Writers Program. Coursework will provide participants the opportunity to engage in the study of researched-based pedagogy for the teaching of evidence-based argument writing while nurturing themselves as writers. Term offered: irregular. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5145 - Theory**

Designed to enrich students' understanding of a variety of modes of theoretical discourse that have influenced modern critical practice in English studies. While the course explores the evolution of criticism, it gives primary emphasis to recent developments. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5150 - Research Methods**

Designed to prepare students for graduate scholarship in language, literacy, and the teaching of writing; should be taken soon after entering the program. Introduction to the research methods and stylistic standards for graduate-level writing. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5155 - Genres of Writing**

Explores work of major contributors to genre and narrative theory. Offers students exposure to emergent genres in new media, while situating these new genre in relation to historical precedents. Gives students an introduction to the evolution of central genres in literary studies, such as novel, poem, political speech and western film. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5160 - Poetics**

"Mechanics" of poetry in English, including meter, rhythm, rhyme, line, and other systems of measurement and logic. Emphasis is on historical development of poetic art in English. Note: this course assumes that students have completed ENGL 1400. Prereq: Graduate standing. Cross-listed with ENGL 4160. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5165 - Literacy and Technology**

Studies the material forms in which English language has circulated-e.g., the history of the oral and manuscript tradition; the history of the book; and the impact of digital technologies on print culture. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5166 - History of American Poetry**

Examines major American poets and poetic trends from the colonial period to the present, with attention to cultural contexts and to development of distinctively American practices. Cross-listed with ENGL 4166. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5171 - Language Theory**

Introduces linguistic theory to the beginning graduate student. Builds upon the material included in the undergraduate class, by adding materials pertaining to the teaching of writing and graduate language studies. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5175 - Writing in the Sciences**

Provides rhetorical analyses of scientific discourse and student practice in writing research reports and proposals. Restriction: Restricted to students at the graduate level (including non-degree and Anschutz Medical Campus programs). Cross-listed with ENGL 4175. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5177 - Technical Editing**

Provides instruction in the conventions of editing in the genre of technical communication. Students develop skills they can use to edit a variety of technical documents. Restriction: Restricted to Graduate and Graduate Non-Degree students. Cross-listed with ENGL 4177. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5190 - Advanced Topics in Writing & Digital Studies**

Focuses on particular issues in rhetoric and writing as they pertain to reading and writing, including language and gender, language and culture, and language of political action. Cross-listed with ENGL 4190. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ENGL 5200 - Survey of the English Novel to 1900**

Rise and development of the English novel from its beginnings in the 18th century through the end of the 19th century, including such writers as Defore, Fielding, Austen, Shelley, the Brontes, Thackeray, and Dickens. Cross-listed with ENGL 4200. Prereq: Graduate standing. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5210 - History of the English Novel II**

Overview of the English novel from mid-19th century to World War II, emphasizing the important developments which the form underwent in the hands of notable novelists, including Charles Dickens, the Brontes, George Eliot, Henry James, Joseph Conrad, D.H. Lawrence and Virginia Woolf. Cross-listed with ENGL 4210. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5220 - African-American Literature**

Surveys African-American literature with special emphasis on post-Civil War writing. Cross-listed with ENGL 4220, ETST 4220. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5230 - The American Novel**

Surveys major developments in the American novel from the 18th century to the 21st century. Cross-listed with ENGL 4230. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5235 - Faulkner**

Studies the works of Faulkner's high period with special attention to southern themes and Faulkner's experimentation with narrative form. Cross-listed with ENGL 4235. Prereq: Graduate standing. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5236 - The American Short Story**

Traces the development of the short story in the United States, from its beginnings in colonial tales to its contemporary renaissance as a dominant literary form. Cross-listed with ENGL 4236. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5240 - Topics In Contemporary American Literature**

Seminar focusing on a segment of contemporary American literature. Cross-listed with ENGL 4240. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5250 - Twentieth Century Fiction**

Deals with novels originating in a variety of countries in an effort to see the similarities and differences that varying nationalities bring to the genre. Cross-listed with ENGL 4250. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5280 - Proposal and Grant Writing**

Focuses on research, design, composition, and editing original proposals. Includes idea development, identification of funding sources, and the creation of persuasive documents. Prereq: Graduate standing. Cross-listed with ENGL 4280. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5300 - History of British Drama**

Intended as a survey of British drama from the miracle plays of the medieval period, through the Renaissance and Restoration, to the "kitchen sink" realists of the 1960s. Cross-listed with ENGL 4300. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5306 - Survey of Feminist Thought**

Examines changes and continuities in feminist thought from the 18th century to the present, using historical and literary materials. Explores the ways that women's characteristics, experiences, and capabilities have been understood and challenged. Cross-listed with ENGL 4306, HIST 4306, 5306, WGST 4306, 5306. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5308 - Contemporary Feminist Thought**

This course explores contemporary feminist thought in philosophy and literature in the 20th and 21st centuries. Topics include lesbianism, black feminism, Chicana feminism, transgender identity, women and work and others. Prereq: Graduate standing. Cross-listed with ENGL 4308, PHIL 4308, PHIL 5308, WGST 4308, WGST 5308. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5320 - History of Poetry in English**

Studies the major schools and eras of English prosody, including the poetry of Great Britain and the United States, from the medieval period to the present. Cross-listed with ENGL 4320. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5350 - History of American Drama**

Studies American drama from its foundations in the 18th century through movements including realism, expressionism, symbolism, agit-prop, black nationalism, feminism, and performance art. Drama read as both text and performance, as sometimes supporting the status quo and as sometimes subverting it. Cross-listed with ENGL 4350. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5400 - Old English I**

Instruction in the Old English language. Note: this course assumes that students have completed ENGL 2070 or one year of college level coursework in a foreign language. Prereq: Graduate standing. Cross-listed with ENGL 4400. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5410 - Old English II: Beowulf**

Continuing training in the reading of Old English and intensive reading of Beowulf. Note: this course assumes that students have completed ENGL 4400 or 5400. Prereq: Graduate standing. Cross-listed with ENGL 4410. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5420 - Film Theory and Criticism**

(1) Familiarizes students with some of the central concepts and debates in film theory and criticism, both classic and contemporary, (2) enables students to develop advanced analytic and interpretive skills, and (3) guides students toward discovering and articulating original critical and theoretical perspectives. Note: this course assumes that students have completed ENGL 2250, 3070, and 3080 or equivalent. Prereq: Graduate standing. Cross-listed with ENGL 4420. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5460 - Contemporary World Literature**

Surveys literature written by world writers since World War II. Note: Texts read in English. Cross-listed with ENGL 4460. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5500 - Medieval Literature**

Introduces representative writers from the Norman Conquest to about 1550. Emphasis on a variety of genres, including religious poetry, Arthurian romance, dream vision and drama.

Cross-listed with ENGL 4500. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5510 - Whores and Saints: Medieval Women**

Studies how women are presented in texts, as well as works by women. Investigates the roles open to women and societal attitudes toward women, who were considered seductresses, saints, scholars and warriors in the middle ages. Note: this course assumes that students have completed at least 9 hours of literature coursework. Prereq: Graduate standing. Cross-listed with ENGL 4510, RLST 4730/5730, WGST 4510/5510. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5520 - English Renaissance**

Introduces some of the important writers in this major period of English literature (1500-1660). Special attention to the works of Sidney, Milton, Spenser, Shakespeare, Donne, Herbert and Johnson. Cross-listed with ENGL 4520. Prereq: Graduate standing. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5530 - Milton**

Extensive reading in John Milton's poetry (Lycidas, Paradise Lost, Paradise Regained, Samson Agonistes) as well as his political, social and theological writings. Cross-listed with ENGL 4530. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5540 - Restoration and the 18th Century**

Introduces some of the important writers of the "Age of Reason." Emphasis on such figures as Bunyan, Burke, Dryden, Johnson, Pope and Swift. Cross-listed with ENGL 4540. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5560 - English Romanticism**

Studies major works of the chief English writers of the first part of the 19th century, with emphasis on such representative figures as Wollstonecraft, Godwin, Blake, Wordsworth, Coleridge, Hazlitt, Byron, Keats and Shelley. Cross-listed with ENGL 4560. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5580 - The Victorian Age**

Examines the main currents of Victorian thought in prose and poetry from about 1830 to the end of the century, including such writers as Browning, Carlyle, Mill, Newman, Ruskin, Swinburne and Tennyson. Cross-listed with ENGL 4580. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5600 - Modernism**

Modernist literature from the beginning of the 20th century through World War II, including such writers as Eliot, Joyce, Forester, Ford, Yeats, Woolf and Barnes. Examines the social-political influences as well as the aesthetic and stylistic elements which define modernist writing. Cross-listed with ENGL 4600. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5601 - Principles and Practices of Second Language Acquisition**

Overview of basic principles and practices in the learning and teaching of English as a second language. Cross-listed with ENGL 4601. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5610 - Narrative: Form and Theory**

A critical and theoretical exploration of the elements of narrative -e.g., plot, character, dialogue, discourse-in literature and film. This course is especially useful for fiction-writing students in the Creative Writing Track. Prereq: Graduate standing. Cross-list ENGL 4610. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5650 - American Literature to the Civil War**

Graduate survey of American literature from the Colonial period to the Civil War, with particular attention to the question of what makes this literature distinctly American. Explores a wide range of genres of American literature in an effort to assess how this tradition of letters shaped our historical past and continues to influence contemporary American culture and ideology. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5651 - Second Language Writing**

Topics include the similarities between first and second language writing, the processes of composition and revision, teacher response to student writing, student processing of feedback, writing assessment, and the reading or writing connection. Cross-listed with ENGL 4651. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENGL 5655 - American Literature: Civil War to the Cold War**

Graduate survey of American literature from the Civil War to the Cold War considered central to the tradition of American literature. Students will consider how new ideas about gender, race, class, nationality, postcoloniality, history, and aesthetics have influenced the field of American literary studies. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5730 - Chaucer**

Extensive reading in Chaucer's works in Middle English, including his lyrics, dream visions, Troilus and Criseyde, and the Canterbury Tales. Examines sources, historical and ideological factors influencing the texts. Prereq: Graduate standing. Cross-listed with ENGL 4730. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5735 - Philosophy and Literature**

Considers the philosophical dimensions of literature. Cross-listed with ENGL 4735, PHIL 5730, 4730. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5745 - Humanistic Writing About Medicine and Biology**

Investigates medical and biological writing over the last two centuries with an emphasis on reception, ethical issues, and the differences between professional and popular writing. Prereq: Graduate standing. Cross-listed with ENGL 4745. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5755 - Illness & Disability Narrative**

Narratives of mental, chronic or terminal illness, and disability have become common over the past decades. There are a number of ways in which these stories are told by those reflecting on their experiences: individuals choosing to tell such stories must consider how their stories will be received and what they are revealing about themselves in dealing with their conditions. Many issues arise when looking at the production and reception of these narratives, including acceptance and assimilation, stigmatization, access and quality of treatment, discrimination, accommodation, pity and stereotyping responses. These narratives are consumed, usurped, and reacted to by clinicians, communities and society at large with their own agendas, expectations, fears and judgments of the stories and of the individuals telling their stories. This course is about the issues and concerns of producing an illness or disability narrative and the consumption/reception of those narratives by health professionals, communities, and society at large. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross listed with ENGL 4755. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 5770 - Topics in English: Film and Literature**

May look at specific genres, aesthetic approaches to literature, ideological or socio-political agendas, or other special topics in literature and/or film. Prereq: Graduate standing. Cross-listed with ENGL 4770. Term offered: spring, fall. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 3

### **ENGL 5840 - Independent Study: ENGL**



Prereq: Graduate standing. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **ENGL 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Prereq: Graduate standing. Term offered: fall, spring. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **ENGL 5913 - Practicum in Language and Rhetoric**

Supervised work in applied language or rhetoric and the teaching of writing. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **ENGL 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ENGL 6001 - Critical Theory in Literature and Film**

Designed to enrich students' understanding of a variety of modes of theoretical discourse that have influenced modern critical practice in literary and film studies. While the course explores the evolution of criticism, it gives primary emphasis to recent developments. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 6002 - Rhetorical Theory**

Examines the principles and applications of rhetorical theory and its relationship to writing. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENGL 6010 - Studies of Major Authors**

Note: May be repeated when topics vary. Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ENGL 6110 - Special Topics in Literature**

An intensive study of specialized topics in English and/or American literature. Note: May be repeated when topics vary. Prereq: Graduate standing. Repeatable. Max Hours: 30 Credits. **Semester Hours:** 3 to 3

## **ENGL 6120 - Special Topics in Film**

An intensive study of specialized topics in film. Note: May be repeated when topics vary. Prereq: Graduate standing. Repeatable. Max Hours: 30 Credits. **Semester Hours:** 3 to 3

## **ENGL 6840 - Independent Study**

Prereq: Graduate standing. Term offered: fall, spring. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

## **ENGL 6920 - Directed Readings**

Offers graduate student's instruction on an individual basis. Serves as preparation for the MA (literature) comprehensive examination. Prereq: Graduate standing. Term offered: fall, spring. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

## **ENGL 6950 - Master's Thesis**

Prereq: Graduate standing. Term offered: fall, spring. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 6

## **ENGL 6960 - Master's Project**

Prereq: Graduate standing. Term offered: fall, spring. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 6

## **ENGL 6970 - Portfolio Exam**

In the portfolio exam, students prepare the culminating document of students' MA work, a portfolio combining reflection on work done at CU Denver with a forward look at students' career goals. Prereq: Graduate standing. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Entrepreneurship**

### **ENTP 3200 - Essentials in Entrepreneurship**

This introductory course informs students of concepts, skills and practical information relevant to startup companies. The materials are designed to help students anticipate HR, financial, and marketing problems through proper planning. The primary objective of the course is to teach students the real-world aspects of entrepreneurship in order to improve the odds of success. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 3201 - Lean Startup Fundamentals**

This course covers everything an entrepreneur needs to know about finance when running a startup or small business. Topics include: financial and legal aspects, financial reporting and cash flow analysis, budgeting, working capital management, asset decisions, obtaining capital, business valuation, franchising, lease versus buy decisions and more. This course counts as a prerequisite to ENTP 3299. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 3210 - Visionary Leadership for New Ventures**

This course provides students with an overview of key leadership principles for creating strategy and managing teams in a startup environment. It introduces leadership concepts critical to gaining true organizational commitment and focuses on case studies relevant to common business issues. By exploring what entrepreneurial leaders actually do and how visionary leadership is required to develop an organization, students will learn how to execute these concepts through measurable goals and objectives. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 3230 - Small Business Accounting and Finance**

Includes financial and legal aspects, financial reporting and cash flow analysis, financial planning, budgeting, working capital management, asset decisions, obtaining capital, business valuation, franchising, lease versus buy decisions, and financial aspects of international trade and different methods of obtaining capital. This course counts as a pre-req to ENTP 3780 and ENTP 3299. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 3240 - Developing Dynamic Concepts**

This course is designed to prepare entrepreneurial-minded students to critically and objectively evaluate the feasibility of their ideas. Entrepreneurs are motivated by plethora of "the next big idea" and are often fatally optimistic about their ideas. The course work will demonstrate how to objectively test and validate the feasibility of an entrepreneurial idea through data-driven analytical and strategic planning. Additionally, this course will provide pragmatic applications of the course content by incorporating real-life case studies presented by practicing entrepreneurs as guest lecturers. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 3260 - High Impact Sales for Entrepreneurs**

Selling one's own concept to prospective customers and investors is very different from selling products in a corporate environment. In this course, students will learn how to get their message heard, get their ideal clients to want to work with them, and use their authentic brand to sell their small-business concept successfully. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 3270 - New Venture Operations**

Introduces an operations model for developing internal and external operation plans for new ventures. Project management knowledge and skills are used to build operation plans. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 3299 - Business Model Development & Planning**

At the heart of every great business is a well-thought out business plan. This course teaches entrepreneurially-minded students how to create one, and students will tackle this project with a team or as an individual. Local entrepreneurs and investors will serve as guest speakers and share their experiences. Mentors and advisors associated with the Jake Jobs Center, as well as special Center-organized experiential events, will provide students with practical feedback. Prereq or Coreq: ENTP 3230 may be taken at the same time as 3299 for a coreq. If 3230 is completed as a prerequisite, a grade of C- or higher is required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 3420 - Ethics: Formula for Success**

Students will learn how to spot and address red flags that foster unethical behavior in both publicly-traded and privately-held businesses. Governance and stakeholder management techniques that incentivize ethical behavior will be highlighted using examples of companies that are financially successful by "doing the right thing." Principle-based ethics are emphasized, namely, integrity, trust, accountability, transparency, fairness, respect, viability, and compliance with the rule of law. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 3800 - Special Topics in Entrepreneurship**

A variety of topics in entrepreneurship are offered. Consult the current 'schedule Planner' for semester offerings. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ENTP 4028 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Cross-listed with ENTP 6028, INTB 4028, and INTB 6028. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 4840 - Entrepreneurship Independent Study**

Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **ENTP 4950 - Special Topics**

A variety of topics in entrepreneurship are offered. Consult the current "Schedule Planner" for semester offerings. Prereq: Topics vary. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 0 to 3

### **ENTP 6020 - Business Model Development & Planning**

Jointly taught by a successful Colorado entrepreneur and an experienced professor, this course familiarizes students with the key steps for preparing a business plan for a new (or existing) business venture. This course provides real-world feedback and advice and integrates coursework with THE CLIMB | Jake Jobs Business Plan Competition events to further enhance the quality of one's business concept. Several past students have won prizes at THE CLIMB and launched successful businesses from concepts developed in the course. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 6022 - Digital Strategy for Entrepreneurs**

This course focuses on how digital innovations are disrupting traditional business practices. Students will participate in a team project where they identify an industry prepared for disruption, and then develop a relevant digital strategy. Students can also expect industry leaders from some of Colorado's greatest digital and tech companies as guest speakers. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 6028 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Cross-listed with ENTP 4028, INTB 4028, and INTB 6028. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 6030 - Entrepreneurship in Emerging Industries**

How entrepreneurs in emerging industries raise capital, find talent, attract customers, manage regulatory uncertainty, and respond to opposition. Focus on blockchain tech, renewable energy, fracking, and sharing economy, we will discuss the challenges and opportunities facing entrepreneurs pioneering new/controversial products and practices. We will also examine how these lessons generalize to innovation in other industries. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 6420 - Ethics: Formula for Success**

Students will learn how to spot and address red flags that foster unethical behavior in both publicly-traded and privately-held businesses. Governance and stakeholder management techniques that incentivize ethical behavior will be highlighted using examples of companies that are financially successful by "doing the right thing." Principle-based ethics are emphasized,

namely, integrity, trust, accountability, transparency, fairness, respect, viability, and compliance with the rule of law. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 6620 - New Venture Operations and Project Management**

Many viable businesses have failed due to cash flow problems, poor management, and poor execution. This course presents students with an operations model for developing internal and external plans when starting new ventures. Utilizing both academic fundamentals and practical knowledge imparted by an experienced instructor, this course provides the project management knowledge and skills needed to build strong operation plans. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 6644 - Impactful Social Innovation**

Innovations in social organizations are unique and warrant equally unique startup strategies for success. This course takes students through various stages of the social enterprise development process, from building competitive business models to attracting investors to operationalizing the business concept successfully while simultaneously doing social good. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 6800 - Special Topics in Entrepreneurship**

A variety of topics in entrepreneurship are offered. Consult the current 'schedule Planner' for semester offerings. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 3 to 3

### **ENTP 6801 - Building Biotechnology**

This course teaches students the fundamentals of life science technology in entrepreneurship. Serving as an introduction to bioinnovation and entrepreneurship, topics covered include tech transfers, accounting and finance basics, opportunity assessments, legal and regulatory environments, clinical trials, project management best practices, ethics and societal issues, and team building. Cross-listed with IDPT 6301. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 6802 - Regulatory Environment of Life Science Innovation**

This course is designed to familiarize graduate-level engineering, business, law and life science students with the fundamentals of life science technology commercialization including drugs, devices, diagnostics, and healthcare IT and platform applications. Cross-listed with IDPT 7302. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 6807 - Personal Branding**

This course is designed to show students how to create successful personal brand strategies for professional and personal development in both entrepreneurial and intrapreneurial

environments. The course work will demonstrate the imperative link between marketing and personal branding through case studies, projects, guest speakers and reading materials. Students will also leave the course knowing how to develop and implement a personal branding plan. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 6822 - Legal and Ethical Issues of Entrepreneurship**

This course addresses the legal issues most frequently encountered by entrepreneurs and others involved in startups and small, closely held or family businesses. The focus is on how to avoid legal problems and how best to cope when they arise. Topics include choice of business form, legal aspects of raising capital, taxation, intellectual property law, employment law, product liability, e-commerce and the problems of managing lawyers and litigation. Note: Cannot receive credit for both BUSN 6540 and this course. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 6824 - Entrepreneurial Financial Management**

This course provides a foundation for the financial management of an entrepreneurial business. Topics covered include differentiation from traditional corporate financial management assumptions, financial aspects of setting up a business, and how to create, evaluate, forecast, and analyze future financial statements. Students will examine theoretical and practical valuation techniques, considerations for buying versus starting a business and franchising. The course also discusses different choices for financing a new business, venture capital, angel financing, crowd funding, private equity and security laws, harvesting alternatives, and financial distress turnaround considerations. Cannot receive credit for both FNCE 6460 and this course. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 6826 - International Entrepreneurship**

This course focuses on the intersection of international business and entrepreneurship. Topics addressed include international entrepreneurship theory and practice (opportunity identification, processes and route to market). This course also highlights new topics in international entrepreneurship such as digital globalization and new technologies driving international entrepreneurship (blockchain and the global supply chain). Leading practitioners and entrepreneurs will be facilitating these modules. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 6834 - Lean Marketing**

This course teaches students how to create successful marketing strategies in entrepreneurial environments where resources are often limited and negative outcomes can be unforgiving. The course work will demonstrate the imperative link between the fundamental marketing principles and entrepreneurial lean marketing guiding principles through real-life case studies, project, videos, podcasts and reading materials. Student will leave this course understanding

how to develop an effective and pragmatic marketing plan for an entrepreneurial venture. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 6840 - Independent Study: ENTP**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ENTP 6842 - New Concept Development**

This course provides insights and tools that will help students assess the viability of new business concepts (a.k.a. those in the very early stages of development). Unlike the "business plan" course where students create an actual plan, this course will help students determine if a new business concept is truly worthy of a business plan. The main objective of the course focuses on understanding problems and solutions from the potential market's perspective. The value of the problem-solution approach is that it quickly gets to the reason why people buy things: to solve perceived problems. Along the way students will employ various experiential and theoretical learning aids to investigate a series of relevant topics such as product markets, new business concepts and entrepreneurial risk-taking. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENTP 6848 - Leadership in New Ventures**

This course provides students with an overview of key leadership principles for creating strategy and managing teams in a startup environment. It introduces leadership concepts critical to gaining true organizational commitment and focuses on case studies relevant to common business issues. By exploring what entrepreneurial leaders actually do and how visionary leadership is required to develop an organization, students will learn how to execute these concepts through measurable goals and objectives. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Environmental Sciences**

### **ENVS 1044 - Introduction to Environmental Sciences**

This survey course develops a basic understanding of ecological relationships and environmental systems. Issues such as the effects of human activities on earth's environment, extinction or diversity, greenhouse effect, hazardous or toxic wastes and human population growth are discussed. Students must also take the accompanying laboratory ENVS 1045. No co-credit with ENVS 1042. Prereq or co-req: ENVS 1045. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 1045 - Introduction to Environmental Sciences Laboratory**



Introduces the basic scientific approach through investigations, observations, and experiments in environmental science. Students must also take the accompanying lecture ENVS 1044. No co-credit with ENVS 1042. Prereq or co-req: ENVS 1044. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **ENVS 1342 - Environment, Society and Sustainability**

Overview of perspectives on environmental issues within the context of sustainable development and taking a systems approach. The focus is on social science approaches to explore the human footprint on the earth, environmentalism, scientific uncertainty, policy creation and social change. Note: This course is a prerequisite for GEOG 4680 Urban Sustainability: Perspectives and Practice. Term offered: fall, spring. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS2. **Semester Hours:** 3 to 3

### **ENVS 2939 - Internship**

Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Note: students must work with the Experiential Learning Center advising to complete a course contract and gain approval. Prereq: sophomore standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ENVS 3082 - Energy and the Environment**

For students of various backgrounds who wish to increase their understanding of the environmental and technical issues of supplying the energy demands of our society. Alternative energy sources and conservation are explored as solutions to promote a sustainable society. Note: One college-level science course and MATH 1110 or equivalent are strongly recommended as preparation for optimal student success. Cross-listed with PHYS 3082. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 3232 - Weather and Climate**

Introduces the processes and systems that govern both day-to-day weather and longer-term climate variations. Covers instrumentation and weather forecasting techniques. Prereq: GEOG 1202 or ENVS 1042 or (ENVS 1044 and ENVS 1045) Cross-listed with GEOG 3232. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 3500 - Topics in Environmental Sciences**

Note: Topics may vary from one offering to the next. Repeatable. **Semester Hours:** 1 to 6

### **ENVS 4300 - Children's Geographies**

This seminar is an interdisciplinary investigation of children, childhood and environment in the context of sustainability and equity. Theoretical and methodological perspectives are applied to understand children's interactions with/in different spaces. Cross-listed with GEOG 4300, GEOG 5300 and ENVS 5300. Restriction: Restricted to students with junior standing or higher or with instructor permission. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 4500 - Topics In Environmental Sciences**

Note: Topics may vary from one offering to the next. Note: necessary prior coursework varies according to the topic. Students should consult with the instructor. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **ENVS 4650 - Environmental Education**

This course links the theory and practice of environmental education to inform curricular development and pedagogical knowledge. Cross-listed with ENVS 5650 and SCED 5650. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 4720 - Climate Change: Causes, Impacts and Solutions**

Examines science behind past, present & future climate change & environmental, social & political implications & solutions. Explores recent scientific research, syntheses & mainstream literature advancing knowledge about causes & consequences of natural & anthropogenic climate change. Prereq: GEOG 3232. Cross-listed with GEOG 4720/ GEOG 5720/ ENVS 5720. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 4740 - Soil Science and Geography**

Reviews chemical and physical properties of soils, soil development, and geographic distributions of soil types in the context of the role that soils play in natural and human-altered ecosystems. Cross-listed with GEOG 4740, GEOG 5740, ENVS 5740. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 4840 - Independent Study: ENVS**

Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **ENVS 4850 - Understanding and Communicating Field Methods**

Interdisciplinary course that presents a balanced overview of common field methods and how to communicate them effectively to a general audience. Includes hands-on experience with various field methods (e.g., transects, survey design, historical assessment, GIS, etc.) and communication strategies. Note: this course assumes that students have completed an introductory geography or environmental science course. Prereq: Junior standing or higher.

Cross-listed with ENVS 5850 and GEOG 4850/5850. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **ENVS 4900 - Colloquium**

Engages students and faculty in discussion of current and pertinent world topics, including specific readings, (guest) presentations, and creation of working research papers, among other items. Students and faculty may work in research groups to accomplish specific goals. Prereq: Junior standing or higher. Cross-listed with ENVS 5900, GEOG 4900 and 5900. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 1 to 1

### **ENVS 4992 - Advanced Regional Field Study**

Directed, hands-on study of concepts involved in understanding geographic regions. Utilizes field observations, field techniques/methods, & data observation, collection, analysis, & interpretation related to the specific region being studied. May include physical as well as cultural phenomena. Note: Instructor permission required. Cross-listed with ENVS 5992, GEOG 4992, GEOG 5992. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

### **ENVS 4995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 9

### **ENVS 5010 - Landscape Biogeochemistry**

A holistic approach to studying the role chemical elements play in synthesis/decomposition cycles, and the resultant environment from interaction of the lithosphere with the hydrosphere, atmosphere, biosphere, and pedosphere during geological, and ecological timeframes, together with anthropogenic activities. Note: this course assumes that students have completed an introductory college-level physical geography or environmental science course. Prereq: Graduate standing. Cross-listed with GEOG 4010/GEOL 4010. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 5020 - Earth Environments and Human Impacts**

Basic concepts describing earth's biomes and physical environment are presented in a systems context. Global warming assessment, from both political and scientific perspectives, is then presented. Model visualization of these concepts to consider human impacts on Earth's biomes is discussed. Earth system viewpoint, having links of Earth's biomes to oceans and atmosphere, completes the course discussion. Cross-listed with GEOG 4020, GEOL 4020. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 5030 - Environmental Geology**

Applies geological information to interactions between people and the physical environment. Increasing awareness of its importance in our society means that this is an expanding field as companies are required to address the environmental consequences of their actions. Note: students should be enrolled in the MSES program to take this course. All other students should consult with the instructor and obtain their permission prior to registering for this course. Prereq: Graduate standing. Cross-listed with GEOL 4030 and 5030. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 5280 - Environmental Hydrology**

Examination of hydrologic processes in relation to climate, soils, vegetation, land-use practices, and human interactions. Natural scientific perspectives emphasized; field and laboratory included. Note: this course assumes that students have completed GEOG 1202 and one of: 1) GEOG 3232; 2) GEOG 4240/GEOL 4240/GEOG/5240; 3)GEOG 4010/GEOL 4010/ENVS 5000. Prereq: Graduate standing. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **ENVS 5300 - Children's Geographies**

This seminar is an interdisciplinary investigation of children, childhood and environment in the context of sustainability and equity. Theoretical and methodological perspectives are applied to understand children's interactions with/in different spaces. Cross-listed with GEOG 4300, ENVS 4300 and ENVS 4300. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 5305 - Water Quality and Resources**

Introduces water resources aimed at students with little or no background in the field. This is a broad course covering topics ranging from the physical aspects of water to water politics and international law. While the course is largely a lecture format, discussion of current issues is a significant part of the class. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with GEOG 4305. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 5340 - Equity & Culture in Science Education: Local/Global**

This course examines literature in science education related to issues of culture and equity. Topics will be framed by an understanding of equity in diverse classrooms and how it informs research, curriculum and instruction. Cross-listed with SCED 5340. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 5403 - Unsaturated Zone Hydrology**

Focuses on water and contaminant transport through the unsaturated zone, infiltration and drainage, and heat and gas transport. Students learn to design, perform field installation, and collect data in order to model and predict contaminant movement on/off site. Note: this course assumes that students have prior coursework in chemistry, physics, or calculus. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 5410 - Aquatic Chemistry**

Course objectives are to: (1) identify and understand chemical and physical principles and processes that control the composition of natural water, (2) prepare students to critically evaluate scientific literature and experimental design related to water quality and environmental remediation, and (3) examine the validity of environmental water data. Note: this course assumes that students have completed general chemistry and/or CHEM 4700. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 5450 - Urban Food and Agriculture: Perspectives and Research**

Provides an overview of research & practices in urban farming. Critically reviews emergent models of local food production/distribution. Compares new practices to traditional agribusiness. Assesses the prospects for solving sustainability problems within the modern agro-food system. Note: this course assumes that students have completed GEOG 3401. Prereq: Graduate standing. Cross-list GEOG 4450. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 5460 - Sustainable Urban Agriculture Field Study I**

Provides a field-based overview of urban farm planning & management. Topics: range/land conservation, native/invasive species, water distribution, animal husbandry, government interaction, local markets, community relations, conservation easements and issues pertaining to urban farming. Note: this course assumes that students have completed ENVS 5450. Prereq: Graduate standing. Cross-list GEOG 4460. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 5470 - Sustainable Urban Agriculture Field Study II**

Provides a field-based overview of current practices in local agricultural production. Emphasis will be placed on sustainable practices and their most efficient situation, Special consideration will be given to plausible solutions for food insecure communities both local and global. Note:

this course assumes that students have completed ENVS 5450 and 5460. Prereq: Graduate standing. Cross-listed with GEOG 4470. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 5480 - Urban Vegetable CSA: Planning, Production&Distribution**

This course outlines the planning, production, and distribution in an active urban vegetable CSA (community supported agriculture) model. It is offered as a part of the GES Sustainable Urban Agriculture Certificate. Cross-listed with GEOG 4480. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 5500 - Topics in Environmental Sciences**

Topics may vary from one offering to the next. Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **ENVS 5600 - Applied Statistics for the Natural Sciences**

Surveys statistical techniques including: quick review of basic statistics, tests for normality and outliers, display of data; simple and multiple regression; ANOVA and its relation to regression. Emphasis on computer or stat-pak analysis and interpretation of statistical results. Note: this course assumes that students have completed college algebra and GEOG 3080 or equivalent. Prereq: Graduate standing. Cross-listed with GEOG 4770. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 5620 - Health Risk Communication**

Acquaints students with contemporary theory, research, and practice in health risk communication. Cross-listed with COMM 5620/4620 and PBHL 4620. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 5650 - Environmental Education**

This course links the theory and practice of environmental education to inform curricular development and pedagogical knowledge. Prereq: Graduate standing. Cross-listed with ENVS 4650 and SCED 5650. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 5700 - Synthesis for Interdisciplinary Science**

Synthesis is an approach in interdisciplinary research and education that links ideas, data and methods. This course develops synthesis skills through the lens of systems theory. It includes exercises for synthetic thinking, examination of integrative tools, and a service-learning project. Cross-listed with GEOG 4700. Breadth and depth training in environmental sciences. Interest in interdisciplinary collaboration. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENVS 5720 - Climate Change: Causes, Impacts and Solutions**

Examines science behind past, present & future climate change & environmental, social & political implications & solutions. Explores recent scientific research, syntheses & mainstream literature advancing knowledge about causes & consequences of natural & anthropogenic climate change. Cross-list GEOG 4720/ GEOG 5720/ ENVS 4720. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENVS 5730 - Air Quality Modeling and Analysis**

Emphasizes the use of air dispersion modeling tools. Topics include: sources and effects of air pollution, use of the WWW, and analysis of modeling results. Note: For graduate students in environmental sciences or engineering, and for those working in the environmental field. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENVS 5731 - Mountain Biogeography**

This course utilizes the close proximity of the Rocky Mountains to examine altitudinal influences on species distributions. Topics include species patterns and distributions, disturbance, climate impacts, forest management and sustainability. Note: Please add this course note: A three-day field trip within Colorado will occur the first weekend of the Fall semester, and is highly encouraged. Restriction: Restricted to Graduate and Graduate Non-Degree students. Cross-listed with GEOG 5731. Max hours: 4 Credits. **Semester Hours:** 4 to 4

## **ENVS 5740 - Soil Science and Geography**

Reviews chemical and physical properties of soils, soil development, and geographic distributions of soil types in the context of the role that soils play in natural and human-altered ecosystems. Prereq: graduate standing or permission of instructor. Cross-listed with GEOG 4740, GEOG 5740, ENVS 4740. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ENVS 5840 - Independent Study: ENVS**

Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

## **ENVS 5850 - Understanding and Communicating Field Methods**

Interdisciplinary course that presents a balanced overview of common field methods and how to communicate them effectively to a general audience. Includes hands-on experience with various field methods (e.g., transects, survey design, historical assessment, GIS, etc.) and communication strategies. Note: this course assumes that students have completed an introductory geography or environmental science course. Prereq: Graduate standing. Cross-listed with ENVS 4850 and GEOG 4850/5850. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **ENVS 5900 - Colloquium**

Engages students and faculty in discussion of current and pertinent world topics, including specific readings, (guest) presentations, and creation of working research papers, among other items. Students and faculty may work in research groups to accomplish specific goals. Prereq: Graduate standing. Cross-listed with ENVS 4900, GEOG 4900 and 5900. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 1 to 1

### **ENVS 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **ENVS 5992 - Advanced Regional Field Study**

Directed, hands-on study of concepts involved in understanding geographic regions. Utilizes field observations, field techniques/methods, & data observation, collection, analysis, & interpretation related to the specific region being studied. May include physical as well as cultural phenomena. Cross-listed with ENVS 4992, GEOG 4992, GEOG 5992. Note: Instructor permission required. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

### **ENVS 5995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Prereq: Graduate standing. Cross-listed with ENVS 4995, GEOG 4995, and GEOG 5995. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 9

### **ENVS 6000 - Environmental Sciences Seminar**

Student and faculty presentations of UCDHSC research projects and other current environmental sciences topics. All environmental sciences students are encouraged to attend, but credit is given only to students who present seminars. Two semesters of this course are required to receive a M.S. in Environmental Science degree: these students must register for this seminar and give presentations the first semester they are in the M.S.E.S. program and the



semester in which they defend their master's project. Prereq: Graduate standing. Term offered: fall. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **ENVS 6002 - Research Topics in Environmental Sciences**

Introduces research and professional development in the environmental sciences, focusing on current issues and trends in the field, methods of developing research and project proposals, and defense of a proposal written during the semester. Students are introduced to the environmental sciences faculty and their research programs. Prereq: Graduate standing. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **ENVS 6004 - Research Methods in Environmental Science**

This core MS Environmental Science course will explore a range of methods commonly encountered in environmental science fields and how to develop a research project and proposal. Prereq: ENVS 6002. Restriction; Restricted to graduate-level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 6100 - Research Topics in Environmental Management**

This is one of 4 core MS Environmental Science courses that will review and apply the principles and methods involved in designing and implementing effective environmental management. Prereq: Must be graduate level and have completed ENVS 6002. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 6200 - Risk Assessment**

The process of determining the likelihood and extent of harm that may result from an activity or event. Topics covered are: hazard identification, dose-response evaluation, exposure assessment, and risk characterization. The subjects of risk management, risk perception, and risk communication are also discussed. Cross-listed with CVEN 5494, HBSC 7340. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 6210 - Human Health and Environmental Pollution**

Examines the roles of technology and society in the etiology and control/prevention of adverse health outcomes associated with releases of toxic substances. Examples come from experience and the literature on occupational cancer and reproductive hazards, occupational and environmental regulation of hazardous wastes, air, and water pollution. Cross-listed with HBSC 7210. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 6220 - Toxicology**

Introduces the field of toxicology. Emphasizes the mechanisms by which chemicals produce toxic effects and the methods for assessing toxicity. Note: Designed for students in the environmental sciences and occupational health fields. Note: this course assumes that students have completed one year of college chemistry and one year of college biology. Prereq: Graduate standing. Cross-listed with HBSC 7360. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 6230 - Environmental Epidemiology**

Provides a basic understanding of the methods used to study the effects on human health of exposures to physical, chemical, or biological factors in the external environment. The course explains the use of epidemiologic methods through a problem solving approach to investigating environmental health case studies. Note: this course assumes that students have completed a basic statistics course. Prereq: Graduate standing. Cross-listed with HBSC 7310. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 6800 - Community-Based Research Practicum**

For students to apply the concepts and skills presented throughout the masters program in a community setting. Students will participate in a real-world, studio-based project that meets the needs of a government, non-governmental, or private sector organization and will produce a scoped product. Prereq: ENVS 6002 with a grade of C or higher. Cross-listed with GEOG 6800. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ENVS 6840 - Independent Study: ENVS**

Prereq: Graduate standing. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **ENVS 6950 - Master's Thesis**

Prereq: Graduate standing. Repeatable. Max hours: 11 Credits. **Semester Hours:** 1 to 6

### **ENVS 6960 - Master's Report**

Prereq: Graduate standing. Repeatable. Max hours: 6 Credits. **Semester Hours:** 3 to 6

### **Ethnic Studies**

#### **ETST 1111 - First Year Seminar**

Restriction: Restricted to Freshman level students. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ETST 2000 - Introduction to Ethnic Studies**

Multi-disciplinary survey of contemporary and historical research analyses of the diverse social, economic, political, and cultural facets of African American, American Indian, Asian American, and Latino communities and cultures. Term offered: fall, spring. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS3. **Semester Hours:** 3 to 3

## **ETST 2010 - Introduction to Chicana/o Studies**

This course introduces students to the broad range of the interdisciplinary field of Chicana/o Studies by examining the Chicana/o experience including history, identity, politics, immigration, labor, literature, and popular culture. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ETST 2024 - Race and Ethnic Relations**

Surveys race and ethnicity, facts and myths about great populations, and the social and cultural sources of bias and discrimination. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ETST 2105 - African American Contemporary Social Issues**

Exposes students to those areas of intellectual, social, cultural, economic, political, and educational concerns relevant to the African American experience. Principally an introductory survey of primary issues currently affecting the African American population. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ETST 2155 - African American History**

Surveys the history of African Americans. Study interpretations, and analysis of major problems, issues, and trends affecting the African American population from pre-slavery to the present. Term offered: fall, spring. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-HI1. **Semester Hours:** 3 to 3

## **ETST 2294 - Race and the Media**

Virtually all Americans are susceptible to the blatant and subtle socializing and conditioning effects of the modern media (film, television, the internet). Explains the variety of cultural values transmitted through the media, with particular emphasis on racial issues. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ETST 2400 - Issues in Chicano/a Education**

Historical overview of segregation, landmark court cases and immigration policy in the education of Chicano/as in Colorado and nationally from 1920 to the present. The intersection of these issues in the education of undocumented students is also examined. Cross-listed with TCED 2400. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 2840 - Independent Study: ETST**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Repeatable. Max Hours: 3 Credits.

**Semester Hours:** 1 to 3

### **ETST 3002 - Ethnicity, Health and Social Justice**

Surveys core issues contributing to racial or ethnic minority differences in health status. Historical and contemporary U.S. health and social policy, including the areas of environmental health, sexual and reproductive health, children and immigrants, are examined. Cross-listed with PBHL 3002. Term offered: fall. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **ETST 3036 - American Indian Cultural Images**

Analysis of images and perceptions of American Indians in American culture, as seen in politics, education, film, photography, advertising, art, literature and the media. Note: Students may not earn credit for this course if they have earned credit for ETST 2036. Term offered: fall, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 3108 - Chicano/a and Latino/a History**

An historical analysis of person's descendant from Mexico and Latin America. Areas of focus include ethnohistorical backgrounds, current interrelations, and social movements in both rural and urban groups. Other topics include: cultural patterns, identity maintenance, social reforms and problems of national incorporation. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 3110 - Indigenous Studies**

Examines how communities in diverse world regions preserve tradition, share knowledge, and respond to influences both within and outside of their immediate environments. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 3211 - Hip Hop Music & Culture**

Covers the historical trajectory of hip hop music and culture from inception, aims to restructure stereotypes and offer a deeper perspective into how hip hop defines the identities of individuals as well as the consciousness of the masses within society. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 3224 - U.S. Middle East Culture and Religion**

Explores the history and development of the various major religions, cultures, and ethnic groups in the Middle East, their evolution and interaction in the U.S., and the historical impact and influence of the region, which continues to this day. Study of the region is timely and relevant due to U.S. involvement in various conflicts and peace efforts. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 3230 - African American Family**

Exploration of the African American family social institution. Emphasis on historical roots and African influence is still enmeshed in the functioning of the family in modern society. Factors responsible for the ability of the family to meet the challenging society. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 3254 - Race and Ethnicity in the Inner City**

This dynamic course combines aspects of urban studies and sociology. Contemporary cultural factors of the minority ghetto experience are investigated as elements in urban crisis. Emphasis is placed on possible solutions through government agencies and community organization. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 3272 - Global Media**

Introduction to leading issues in the study of transnational media. The course will focus on the global media environment in the early 21st century, diverse countries, a variety of media, and social issues. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 3274 - Power, Poverty, Culture**

Studies the process that has rendered certain groups poor for generations. Studies African Americans, Whites, Chicanos/as and Latinos/as, and other ethnic groups that have lived in this society in a state of poverty. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 3297 - Social History of Asian Americans**

Introductory-level course surveys the social history of Asian American groups from the mid-19th century to the present. Examines immigration patterns, the development of communities,

social and economic problems, and anti-Asian movements and activities. Cross-listed with SOCY 3297 and HIST 3297. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 3350 - Colonial Latin America**

Surveys the creation of colonial empires by Spain and Portugal, 1492-1808. Topics include Native American responses to European incursions, women in colonial society, and slavery in Latin America. Cross-listed with HIST 3350. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 3396 - History of the American Indian**

Indigenous nations in North America comprise hundreds of diverse cultures. This course examines U.S. Indian policy and how indigenous nations responded; how they creatively adapted, and resisted cultural change; and how they continue to persist culturally, socially, and politically. Cross-listed with HIST 3396. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 3408 - Social Psychology of Latinos/as**

Exposes students to research on Latinos/as in the areas of intelligence and achievement, language and learning ability, attitudes, perception and motivation. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 3574 - Topics in Ethnic Studies**

Topics vary from term to term, based upon interest and availability of instructors in specialized areas. Term offered: spring. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ETST 3697 - Contemporary Asian American Experience**

Examines the contemporary Asian American experience, including the adaptation of new immigrants or refugees, economic and educational problems, ethnic identity, intermarriage, anti-Asian discrimination and other civil rights issues, and recent political activism. Cross-listed with SOCY 3697. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 3704 - Culture, Racism and Alienation**

The effects of racism on the personality of participants in racist cultures. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 3840 - Independent Study: ETST**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes,

to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **ETST 3939 - Internship**

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: Students must have junior standing and at least a 2.75 GPA and must work with Experiential Learning Center advising to complete a course contract and gain approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ETST 3995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 1 to 15

### **ETST 4000 - Research Methods in Ethnic Studies**

Emphasizes the acquisition of a variety of data or information collection and analytic skills, especially those applicable to historical and social inquiry in ethnic studies. Cross-listed with ETST 5000. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 4020 - Race, Culture and Immigration**

In this course, we will consider the social and legal construction of race and immigration. We will also explore how immigrants have been racialized both historically and in the current moment. In addition, we will consider the role of culture in shaping the immigrant experience and immigrant outcomes. Restriction: Junior standing or higher or instructor permission. Cross-listed with SOCY 4020, SOCY 5020 and ETST 5020. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 4030 - Race, Religion and Belonging in the United States**

Race/ethnicity and religion are conconstitutive social and cultural formations that have played a fundamental part in determining the boundaries of belonging of the United States. In this course, students will interrogate when, why and how race/ethnicity and religion have been used to delineate borders, determine citizenship, navigate legal classifications, dictate social mobility, and regulate economic possibilities. We will analyze both primary sources ?such as sermons, reality TV shows, court cases and graphic images?as well as scholarly writing to explore how formations of race and religion have shaped notions of belonging in the US nation?state, thereby constructing the boundaries of the state itself. Cross-listed with ETST 5030, RLST 4030, RLST 5030, HIST 4209 and HIST 5029. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 4144 - Indigenous Political Systems**

Surveys political theory and practice in indigenous societies in the Americas. Examines the impact of indigenous political thought on Euro-American politics, especially the U.S. Constitution, and explores the contemporary impact of indigenous people on current politics. Cross-listed with PSCI 4144. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 4146 - Indigenous Politics**

Surveys the status of the world's native peoples and nations, and the role of law and politics in the future of indigenous peoples in the global arena. Examines questions of human rights, economic development, and international law and politics. Cross-listed with PSCI 4146, 5145. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 4156 - The Arab-Israeli Peace Process**

Critical analysis of Arab and Israeli perspectives on the on-going peace negotiations in the Middle East. Historical background and religious-cultural aspects of current problems. Prereq: Upper division standing. Cross-listed with PSCI 4156. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 4710 - Special Topics in Ethnic Studies**

Students explore advanced topics in Ethnic Studies. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **ETST 4768 - Chicano/Chicana Narrative and Social History**

Provides a general, chronological, and thematic introduction to short stories and novels written by U.S. citizens of Mexican descent. Begins with early 20th century narratives by women, continues with the corrido and Post-World War II male writers, and ends with more recent publications by contemporary women writers. Social, historical, and political backgrounds are also emphasized, along with an analysis of the literary techniques and motifs. Cross-listed with ENGL 4768. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 4840 - Independent Study: ETST**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **ETST 4880 - Directed Research**



Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **ETST 4995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 1 to 15

### **ETST 5000 - Research Methods in Ethnic Studies**

Emphasizes the acquisition of a variety of data or information collection and analytic skills, especially those applicable to historical and social inquiry in ethnic studies. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ETST 4000. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 5020 - Race, Culture and Immigration**

In this course, we will consider the social and legal construction of race and immigration. We will also explore how immigrants have been racialized both historically and in the current moment. In addition, we will consider the role of culture in shaping the immigrant experience and immigrant outcomes. Restriction: Graduate standing or instructor permission. Cross-listed with SOCY 4020, ETST 4020 and SOCY 5020. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 5021 - Black and Latino Children in Families and Schools**

With a focus on application of scholarship to practice, this interdisciplinary course will introduce graduate students to scholarly literature from family sciences, sociology, education and related fields to understand Black and Latino children within family, school and community systems. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HDFR 5020. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 5030 - Race, Religion and Belonging in the United States**

Race/ethnicity and religion are conconstitutive social and cultural formations that have played a fundamental part in determining the boundaries of belonging of the United States. In this course, students will interrogate when, why and how race/ethnicity and religion have been used to delineate borders, determine citizenship, navigate legal classifications, dictate social mobility, and regulate economic possibilities. We will analyze both primary sources ?such as

sermons, reality TV shows, court cases and graphic images?as well as scholarly writing to explore how formations of race and religion have shaped notions of belonging in the US nation?state, thereby constructing the boundaries of the state itself. Restriction: Graduate standing or instructor permission required to register. Cross-listed with ETST 4030, RLST 4030, RLST 5030, HIST 4209 and HIST 5029. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **ETST 5939 - Graduate Internship in Ethnic Studies**

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Note: Students must have graduate standing and must work with Experiential Learning Center advising to complete a course contract and gain approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **ETST 5960 - Capstone in Ethnic Studies**

Provides a broad overview of social research methods pertinent to the study of race, ethnicity, gender, and culture. Explores theories concerning "ethnicity and race" as both social construct and constituent feature of people's identities and lived experiences. Ethnic Studies is an interdisciplinary major where students make connections across diverse fields of inquiry; this course provides a structure for integrating an interdisciplinary examination of the intellectual, cultural, and social dimensions of racial and ethnic groups. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ETST 4960. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ETST 6950 - Independent Study: Ethnic Studies**

Independent study in ethnic studies. **Semester Hours:** 1 to 18

## **Film and Television**

### **FITV 1001 - Fundamentals of Film and Television**

Provides fundamentals in academic theories surrounding visual culture. Topics include representation, spectatorship, mass media and popular culture, new media, and scientific

images. Student participation is through discussion, creative projects, reading, and written response. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 1001 - Fundamentals of Film and Television**

Provides fundamentals in academic theories surrounding visual culture. Topics include representation, spectatorship, mass media and popular culture, new media, and scientific images. Student participation is through discussion, creative projects, reading, and written response. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 1005 - Introduction to Theatre & Arts in the Community**

Discussion, workshops, and lectures designed to discover, analyze, and evaluate all aspects of the theatre experience: writing, acting, directing, staging, history, theory and its relationship to film & video. Attending plays and field trips to several Denver-area theaters, and demonstrations. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-AH1 **Semester Hours:** 3 to 3

### **FITV 1035 - Introduction to Filmmaking**

Students will be introduced to the concepts and practices of filmmaking. Through a series of hands-on exercises students will gain experience production management, cinematography, editing and client/director relationships. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 1040 - Lighting, Grip, and Sound Introductory Workshop**

The purpose of this course is to acquire basic competence with all film/video production equipment. The course acts as an introductory look at maintaining professionalism, efficiency, and safety in film/video sets for cast and crew. Restriction: Restricted to TFTV-BFA majors within the College of Arts & Media with the subplan FIT. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 1050 - Production I Basics of Film and Television**

Learn the fundamentals of video production including idea creation, videography, composing a professional image, cinematic lighting, sound track recording and construction, non-linear software. Individual and collaborative productions for film, video, and TV will be created. Prereq: FITV 1040. Restriction: Restricted to TFTV-BFA majors & FTPM minors (production) within the College of Arts & Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 1110 - Production Design: Theatre, Film and Video**

This design research class explores the creative skills, technical knowledge and scholarly engagement employed by production designers. The students will understand how design

elements enhance a production and create a production design for a video, film or play. Prereq: FITV 1040. Restriction: Restricted to TFTV-BFA majors within the College of Arts and Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 1115 - Horror in Western Culture and Cinema**

This course is designed to analyze the history, practice and production of the horror film. By examining the horror genre students analyze how cinema is both a reflection of the time it was produced as well as it impacts on art and society. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 1120 - Contemporary World Cinema**

This course will examine representative examples of films from around the world to understand the current interest and concerns of world cinema, as well as discern what concerns various countries around the world, and how those concerns are expressed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 1200 - The Culture of Television**

The course will combine viewing of television programs with reading, writing and discussing television as students begin to understand intellectually, and learn to take an analytical view of this remarkable phenomenon. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 1550 - Scriptwriting 1 - Fiction**

Critical exploration of dramatic writing for stage and screen. Understand how imagery, character, story, narrative structure, literary conventions, and more, impact compelling writing. Utilize effective writing and critiquing strategies focused on drafting and writing an original film/TV script. Restriction: Restricted to TFTV-BFA majors within the College of Arts & Media with the subplan FIT. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 1551 - Scriptwriting for Non-Majors**

Critical exploration of dramatic writing for stage and screen. Understand how imagery, character, story, narrative structure, literary conventions, and more, impact compelling writing. Utilize effective writing and critiquing strategies focused on drafting and writing an original film/TV script. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 1600 - Writing Short Film:Non Fiction**

Students study basic writing elements such as idea generation, character building, and scene setting while writing short non-fiction screenplays or teleplays for production. Prereq: TFTV-BFA: FITV 1550. Prereq: FTWM minor: no pre-req. Restriction: Restricted to TFTV-BFA majors &

FTWM minors within the College of Arts and Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 2040 - Introduction to Digital Effects**

Learn the fundamentals of digital effects, animation, compression, and color correction as you incorporate graphic elements into your productions. Demonstrate the skills to utilize software applications used to create 2D, 3D animation, and motion graphics, green screen technology.

Prereq: TFTV-BFA: FITV 1001. Prereq: FTPM minor: FITV 1050 or FITV 1035. Restriction: Restricted to TFTV-BFA majors & FTPM minors within the College of Arts and Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 2050 - Production II Film and Television Techniques**

Through a series of assigned film and TV projects students will be introduced to various genres of filmmaking, while building upon the skills of preproduction, production, and post-production.

Prereq: BFA: FITV 1050. Prereq: FTPM minor: FITV 1050 or FITV 1035. Restriction: Restricted to TFTV-BFA majors & FTPM minors within the College of Arts and Media. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **FITV 2055 - Documentary Production**

Students produce non-fiction film/TV productions in collaboration with non-profit organizations while exploring and experiencing industry practices. Prereq: FITV 1050 + FITV 2090. Restriction: Restricted to TFTV-BFA majors within the College of Arts and Media. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **FITV 2090 - Producing for Film and Television**

Students will learn the various aspects of planning, scheduling, budgeting, and managing both television and film productions. Students will develop skills for conceptualizing projects from script to screen. Prereq: FITV 1550. Restriction: Restricted to TFTV-BFA majors within the College of Arts and Media. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 2220 - Acting for Film and Television**

Provides the study, skill development and workshop experience for the actor in various media – including film, television, commercial, and voice-over work. Students do physical exercises, vocal training, develop vocabulary, and scene exercises. Prereq: BFA : FITV 1050 + FITV 1550. Prereq: FTPM minor: FITV 1050 or FITV 1035. Restriction: Restricted to TFTV-BFA majors and FTPM minors in the College of Arts & Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 2650 - Sound for Film and TV**

Building upon basic understandings of audio for film and television techniques, students will get intermediate instruction and experience with field audio recording and audio post-production practices. Students will work with digital audio editing software to gain knowledge and skills in sweetening, mixing, and sound design. Prereq: FITV 1040. Restriction: Restricted to TFTV-BFA majors within the College of Arts and Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 2670 - Cinematography**

Students create film and TV projects that exhibit effective use of light, composition, depth of field, focal length. Student directors will learn how to collaborate with cinematographers and understand the science of photography, lenses, and lighting. Prereq: FITV 2040 + FITV 1050. Restriction: Restricted to TFTV-BFA majors within the College of Arts and Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 3040 - Live TV Multi-camera Directing**

Working in a multi-camera television studio environment, students in this course will experience each aspect of creating multiple live-to-tape television programs. Students will work in teams to create a television pilot as well as individual projects. Prereq: BFA: FITV 3050 + FITV 3500. Prereq: FTSM minor: FITV 1050 or FITV 1035. Restriction: Restricted to TFTV-BFA majors & FTSM minors within the College of Arts and Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 3050 - Junior Project Production**

Students will refine their knowledge of single-camera film and TV techniques in this hands-on, collaborative course. Students will conceptualize, develop, and shoot a short film or television project throughout the semester. Emphasis on storytelling, production design, production management, and cinematography. Prereq: FITV 2050 + FITV 1200 + FITV 2670 + FITV 2650. Restriction: Restricted to TFTV-BFA majors within the College of Arts and Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 3060 - Junior Project Post Production**

Students will apply post-production skills learned in previous courses to edit projects produced in Prod 3/Jr Project. This course will emphasize the completion of a professional broadcast-quality production with full audio and visual sweetening. Students will attain advanced editing skills through a longer format project. Prereq: FITV 3050 + FITV 3500. Restriction: Restricted to TFTV-BFA majors within the College of Arts and Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 3090 - Producing Episodic Television**

Students explore and develop skills in the collective practices necessary for the full production of an episodic television series. Students will actively participate in various aspects of episodic television production including preproduction, production, and post-production. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 3200 - Film History 1**

The development of cinema in the early 1880s brought with it a wealth of techniques still used today, from the close-up to crosscutting and montage. In this course students will view, analyze, research, and critique the beauty and sophistication of silent film from its beginnings through the late 1930s. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 3220 - Advanced Acting Workshop for Film and Television**

Students will further explore techniques and practices in the performing for film and television projects. This is an intense workshop designed to better prepare students to perform for a variety of on-camera projects. Prereq: FITV 2220. Restriction: Restricted to TFTV-BFA majors within the College of Arts & Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 3264 - Advanced Digital Effects**

Students will study software and create projects with advanced visual effects. With industry standard techniques in animation, applying compositing, image acquisition and motion graphics. Students will create a variety of projects by the end of the semester. Prereq: FITV 2040. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 3300 - Film History 2**

Take a journey through the many genres of film, from the introduction of sound to the present. Students will trace the development of various Hollywood genres and examine films that represent major developments in American cinema. In this course students will view, analyze, research, and critique films from 1938 to the present. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 3350 - Editing Aesthetics**

A historical, theoretical, and practical hands-on approach to deconstructing and utilizing editing aesthetics. Students will consider the theory behind editing strategies that elicit an emotional or response from viewers, and put those theories to practice through demonstrative production exercises as well as analytical writing. Prereq: FITV 2050. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 3500 - Writing for Episodic Television**

Explores the constructive and critical process of writing prime-time dramatic television and alternative broadcast platforms. Each student is guided through a series of viewings, readings, and writing exercises culminating with the written completion of television episodes for an original series. Prereq: TFTV-BFA FITV 1200 + FITV 2050. Prereq: FTWM minor: FITV 1551  
Restriction: Restricted to TFTV-BFA majors and FTWM minors in the College of Arts & Media.  
Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 3510 - Feature Screenwriting**

Emphasis is on creating character, conflict and structure through the use of theme, motifs, subplots, and story tone. Students complete the first act and a 25-page feature film treatment or the first draft of a feature-length script. Prereq: TFTV-BFA and FTWM minor: FITV 3500.  
Prereq: Non-TFTV-BFA Majors and Non-FTWM minors must have taken any two of ENGL 3415, ENGL 3417, ENGL 2390 or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 3550 - World Theatre**

Discussion, workshops and lectures designed to discover, analyze and evaluate the world theatre experience from countries outside of the United States. The course will explore theatre and its precedents in Asia, Africa, Eastern Europe and Latin America. Max hours: 3 Credits.  
**Semester Hours:** 3 to 3

### **FITV 3570 - Directing for Film and Television**

Through a series of assigned video projects, students will practice the art of directing several film and television projects. Applying communication skills and directing techniques to the process. Prereq: TFTV-BFA: FITV 2220 + FITV 2050. Restriction: Restricted to TFTV-BFA majors.  
Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 3600 - Denver Film Festival**

Students in this course will know how to contextualize films in terms of content and form. Through film viewing, written assignments, and critical analysis students learn to describe, classify and appreciate narrative, craft and artistic intent. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 3611 - Drama of Diversity**

Investigates the creation and reinforcement of gender, ethnic, and racial stereotypes in theatre, film, and television in the United States. The course explores how popular images are created by writers, directors, and performers, and become "reality" for the audiences for which they are intended. Max hours: 3 Credits. **Semester Hours:** 3 to 3



## **FITV 3770 - Advanced Production Design for Film and Television**

Students will further explore design elements found in film and television, and utilize class projects in conjunction with other student film projects. Prereq: THTR 1110 or FITV 1110. Restriction: Restricted to TFTV-BFA majors within the College of Arts & Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FITV 4000 - Senior Thesis Production**

The first course of a two-part capstone experience in which students collaborate, plan, cast, budget, and produce a professional quality film/TV project or script. Projects/scripts will be completed in FITV 4010. Prereq: FITV 3060 + FITV 3040 or FITV 3090 + FITV 3200. Restriction: Restricted to TFTV-BFA majors within in the College of Arts and Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FITV 4010 - Senior Thesis Post-Production**

Second course of a two-part capstone experience in which students collaborate on post-production to complete the film/TV/script project. Emphasis will be on editing, color-correcting, audio sweetening, graphics, finishing a fine-cut of their project; students will seek distribution and exhibition. Prereq: FITV 4000. Restriction: Restricted to TFTV-BFA majors within the College of Arts and Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FITV 4020 - CAM Film Productions**

Under the supervision of a faculty member, this class works together as a group to create broadcast quality television projects. Projects will be designed for a PBS television market and may be aired as such. Pre-requisite: FITV 2050. Restriction: Restricted to TFTV-BFA majors within the College of Arts and Media. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

## **FITV 4050 - Advanced Cinematography**

In this production workshop, students will analyze films and storyboards, and shoot projects created for specific action and special effects outcomes. In addition, students will examine a variety of techniques used to create action scenes in preparation for the edit. Prereq: FITV 2670. Restriction: Restricted to TFTV-BFA majors within the College of Arts and Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FITV 4200 - Advanced Directing for Film and Television**

Students will further explore more advanced directing techniques to be utilized in film and television projects. Prereq: FITV 2570 or FITV 3570. Restriction: Restricted to TFTV-BFA majors within the College of Arts & Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 4400 - Acting for Film and TV Practicum**

The practice, study and critique of acting and directing for varying film/TV projects. The class will incorporate, preparatory work, on-camera performance, directing, and an in-depth critique of the resulting work. Pre-req: TFTV-BFA: FITV 3220. Restriction: TFTV-BFA. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 4440 - Color Correction and Mastering for Film and Television**

This course is designed to teach students the process of color grading and film finishing techniques. This includes use of industry standard color correction software and methods of providing deliverables for film and television distribution and exhibition. Prereq: FITV 2040. Restriction: Restricted to TFTV-BFA majors and FTPM minors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **FITV 4600 - Special Topics**

Specialized topics in film and video. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **FITV 4840 - Independent Study: FILM**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

## **Finance**

### **FNCE 2939 - Internship**

Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **FNCE 3000 - Principles of Finance**

This course provides an introduction to financial markets and institutions, financial statement analysis, interest rates and the time value of money, principles of security valuation, concepts of risk and return, and capital budgeting. Note: This course is required in the Business Core. A grade of 'C' or better must be earned. Prereq: MATH 1070 or MATH 1060 or MATH 1110 or MATH 1080 or MATH 1130 or MATH 1401, AND ACCT 2200, AND DSCI/BANA 2010 or ECON 3811 all with a grade of C- or higher, AND ECON 2012 AND ECON 2022. Restriction: Restricted to undergraduate students at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 3500 - Management of Business Capital**

Students learn the basic principles governing the management of capital in the business firm. Topics include management of working capital, cost of capital, capital budgeting, firm valuation, and theory and management of capital structure, grade of 'C' must be earned to take subsequent courses for which this course is a pre-req.. Prereq: FNCE 3000 with a grade of 'C' or better. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 3600 - Financial Markets and Institutions**

Focuses on the supply and demand for loanable funds, the process of money creation, the structure of interest rates, and the role of banks and the Federal Reserve in the financial system. Special attention is devoted to the impact of monetary and fiscal policies on interest rates, the flow of funds and economic activity; and the operation of financial markets and institutions. A grade of 'C' or better must be earned in this course to receive credit for the area of emphasis and to take subsequent courses for which it is a prerequisite. Prereq: FNCE 3000 with a grade of C or higher Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 3700 - Investment and Portfolio Management**

In this course students learn about the different types of investment vehicles, including methods to estimate their value and analyze their risk. They will also be introduced to portfolio management, including the identification of objectives and constraints and the analysis and use of investment information. Topics include the functioning of security markets, asset allocation, security valuation, and portfolio analysis. A grade of 'C' or better must be earned to receive credit for the course, and to take subsequent courses for which it is a prerequisite. Note: FNCE 3700 and FNCE 3600 may be taken concurrently. Prereq: FNCE 3000 with a grade of C or higher. Coreq: FNCE 3500. As a corequisite, FNCE 3500 can be taken concurrently or prior. If completed prior, must earn a C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 3840 - Independent Study: FNCE**

Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **FNCE 3939 - Internship**

Supervised experiences involving the application of concepts and skills in an employment situation. To enroll in an internship, students must work with the Experiential Learning Center on campus and have a 2.40 GPA or higher. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

## **FNCE 4370 - International Financial Management**

Financial management in the international environment. Topics include international capital movements; international operations as they affect the financial functions; foreign and international institutions; and the foreign exchange process. Also considers foreign exchange theory and risk management, financial requirements, problems, sources, and policies of firms doing business internationally. Cross-listed with INTB 4370. Prereq: FNCE 3000 with a C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FNCE 4382 - Survey of Financial and Commodity Derivatives**

This course introduces forward contracts, used in price risk management for millennia. We cover the properties of forward/futures contracts, structure of the markets and strategic implications for speculation and hedging. We price forwards from spot price, and introduce convenience yield. Options used for insurance purpose (think of your car insurance as a put option) is a more expensive way to manage risk; we cover option strategies and basic pricing. The course concludes with swaps, credit derivatives and structured products. Asset classes covered are equity, fixed income, currency, agriculture, energy (oil/gas and electricity) and metal/mining. Prereq: FNCE 3500 and FNCE 3700 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FNCE 4424 - Corporate Restructuring**

Examines the processes and decisions by which mergers, takeovers and other corporate restructuring occur, the transactions occur. Analyzes merger and acquisition decisions as part of strategic decision making, and how firms are valued in mergers. Discusses the market for corporate control and the public policy implications of mergers and corporate governance. Prereq: FNCE 3500. Restriction: Restricted to undergraduate Business majors with a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FNCE 4470 - Behavioral Finance**

Over the past several decades, the field of finance has developed a successful paradigm based on the notions that investors and managers were generally rational and the prices of securities were generally "efficient." In recent years, however, anecdotal evidence as well as theoretical and empirical research has shown this paradigm to be insufficient to describe various features of actual financial markets. In this course we examine how the insights of behavioral finance complements the traditional paradigm and sheds light on the behavior of asset prices, corporate finance, and various Wall Street institutions and practices. Prereq: FNCE 3500 with a C or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FNCE 4480 - Introduction to Financial Modeling**

Develops and implements financial models for purposes of financial planning and decision making. This course seeks to increase students' knowledge and skill in the development of basic Excel-based financial planning models, including cash budgets, financial statements, and capital budgeting analysis. The course also introduces Monte Carlo simulation using Palisade Corporation's @RISK software. Knowledge of computer and spreadsheet software needed. Restriction: Restricted to undergraduate Business majors at a junior standing or higher Prereq: FNCE 3000, FNCE 3500. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 4500 - Corporate Financial Decisions**

This is a required capstone course for the financial management emphasis. It uses the case method to develop the analytical and decision making skills of students. Students are required to apply theories and concepts learned in previous finance and accounting classes to real world scenarios. Topical coverage includes financial analysis, planning, control, working capital management, long-term investment and financing decisions and corporate valuation. A grade of 'C' or better must be earned to receive credit towards graduation. Prereq: MATH 1070 or MATH 1110 or MATH 1080 or MATH 1130 or MATH 1401 AND DSCI/BANA 2010 AND ACCT 2200 all with a C- or higher; ECON 2012 AND ECON 2022 with a D- or higher; FNCE 3000 AND FNCE 3500 AND FNCE 3700 all with a C or higher. Restriction: Restricted to undergraduate students at a senior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 4709 - Life and Health Insurance**

The course is designed to provide the student with the basic understanding of life and health insurance concepts. The course will focus on a needs analysis for individual life insurance needs in preserving an estate or creating an estate. We also focus on the needs of the family and the preservation of the income stream for meeting short and long term needs and how we accomplish this via life insurance. We also will look at life insurance in terms of business planning using such concepts as key person life insurance, funding buy sell agreements, and related needs. On the health side, we will use a needs analysis approach to provide health coverage for the individual and family. We also explore the employee benefits arena and how businesses will focus on providing group medical coverage and related benefits in an ever changing health care environment with health care reform being phased in. We also will explore the internal workings of life and health insurance companies by review. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 4750 - Business Intelligence and Financial Modeling**

In this course, the student learns to analyze and solve financial problems with spreadsheet models, apply Oracle Financial and Business Intelligence software that is widely used in corporate financial operations and model risk and uncertainty with Monte Carlo software. Prereq: ISMG 2050 with a grade of C- or higher, FNCE 3000 and (ISMG 3000 or ACCT 4054) all with a grade of 'C' or higher. Cross-listed with ISMG 4750. Restriction: Restricted to

undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 4802 - Foundations of Commodities**

This course introduces students to the physical aspects of commodities and connects them to the financial markets in which commodities are traded. Fundamental concepts and terminology necessary for understanding commodity production, transportation, economics, financial analysis and marketing are described. Supply chains for several specific commodities are reviewed in detail, as examples of the production and market structure knowledge needed to be successful professional participants in commodity trading capacities. The course also serves a foundation for more focused education in the specific commodity sectors, as well as the applied use of marketing and financial trading concepts learned in other courses. Cross-listed with FNCE 6802 and CMDT 4802/6802. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 4840 - Independent Study: FNCE**

Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 8

### **FNCE 4950 - Special Topics**

Research methods and results, special topics and professional development in finance. Prerequisites vary according to topic and instructor requirements. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max hours: 9 Credits. **Semester Hours:** 1 to 3

### **FNCE 5939 - Internship**

Supervised experiences involving the application of concepts and skills in an employment situation. Prereq: 21 semester hours and 3.5 GPA. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **FNCE 6290 - Quantitative Methods for Finance**

This course provides a statistical foundation for subsequent courses in the Master of Science in Finance program. Major topics include descriptive statistics, probability theory, statistical estimation and inference and regression analysis. The emphasis is on finance applications, such as risk measurement, for portfolio diversification and the "market model". In addition, students develop competence in the use of statistical software packages. This course provides preparation for the statistical portions of the Certified Financial Analyst professional examinations. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FNCE 6300 - Macroeconomics and Financial Markets**

Covers the U.S. financial system in the global economy. Specific topics include financial institutions, money creation and monetary policy; the Federal Reserve System and its operation; the international financial system; interest rate determination, yield curves, and their relation to fiscal policy; the role of households and business in financial markets; stock markets; and money markets and instruments. (Required for the M.S. in Finance degree.) Coreq: BUSN 6620. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FNCE 6310 - Financial Decisions and Policies**

Emphasizes investment and financing decisions, and the analysis of the financial condition of the firm. Specific topics include capital budgeting, cost of capital, financing mix and strategy, firm valuation and management of working capital. Instruction is by the case method. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FNCE 6330 - Investment Management Analysis**

In this course students will learn investment theories and how to apply them to portfolio management. Topics covered include asset allocation, security markets, the analysis and use of investment information, risk analysis and security valuation. This course is required for the M.S. in Finance degree. Prereq: BUSN 6640 and BUSN 6620 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FNCE 6340 - Business Firm Valuation**

In this class, students will learn two valuation techniques, fundamental valuation and relative valuation, to value a business. These techniques are useful in such situations as valuing firms for mergers and acquisitions and valuing stocks for investment purposes. Some of the topics included are valuation of start-up firms, valuation of privately held firms, and valuation of firms with negative earnings. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FNCE 6350 - Financial Innovations**

Innovations include zero coupon bonds, inflation indexed bonds, structured notes, asset-backed securities, collateralized mortgage obligations, and interest rate swaps. The student learns about the markets and pricing of these securities, and how they affect interest rate risk. The course prepares the student for careers in corporate treasury management, structured

financing, swaps trading, and mortgage backed securities design. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 6360 - Management of Financial Institutions**

Overview of financial institutions and their risk management/financial performance management issues such as: management of operational, credit, liquidity, interest-rate, capital, off-balance sheet, and environmental risks; Uniform Bank Performance Report (UBPR) risk/performance analysis, hedging techniques and regulations/performance/risk. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 6365 - Banking Principles and Practices**

Covers money and capital markets, commercial lending, asset and liability management, loan portfolio management and bank management. This class is only available to Colorado Graduate School of Banking students. Similar material is covered in FNCE 6300 and FNCE 6360. Therefore Business School students must enroll in those courses. Banking students cannot receive credit for FNCE 6300 or FNCE 6360. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 9

### **FNCE 6370 - International Financial Management**

Addresses financial management in an international context that considers international capital movements and foreign exchange problems, and international operations as they affect financial functions. It reviews foreign and international institutions and the foreign exchange process and considers financial requirements, problems, sources and policies of firms doing business internationally. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Cross-listed with INTB 6372. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 6372 - Time-Series Forecasting**

Students learn forecasting methodologies such as ARIMA, regression, smoothing, and time-series decomposition applicable to marketing, finance, accounting, human resources management, and supply chain and production management decision-making. This course focuses on practical applications of forecasting techniques, choosing and comparing appropriate methods and applying the results to workplace situations. If you do not meet the prerequisites you may contact the instructor for permission to register. Prereq: BANA 6610 or BUSN 6530 or FNCE 6290 or (BUSN 6530 taken at CU Denver or consent of instructor - no CBK waivers of BUSN 6530 will be considered. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3



## **FNCE 6380 - Futures and Options**

This covers both speculation and hedging using futures and options. The student learns about futures pricing, how futures are related to the underlying commodities and how to design hedges. Stock index futures and interest rates futures get particular attention. The course covers the theory and application of option pricing, focusing on the binomial and Black-Scholes models. Popular options trading strategies are discussed. This course is useful for those who wish to trade or become portfolio managers, as well as those who plan on corporate treasury management. Prereq: BUSN 6640 with a C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

## **FNCE 6382 - Survey of Financial Derivatives**

This course introduces forward contracts, used in price risk management for millennia. We cover the properties of forward/futures contracts, structure of the markets and strategic implications for speculation and hedging. We price forwards from spot price, and introduce convenience yield. Options used for insurance purpose (think of your car insurance as a put option) is a more expensive way to manage risk; we cover option strategies and basic pricing. The course concludes with swaps, credit derivatives and structured products. Asset classes covered are equity, fixed income, currency, agriculture, energy (oil/gas and electricity) and metal/mining. Prereq: BUSN 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FNCE 6410 - Real Options and Decisions Under Uncertainty**

This is an applied course in making investment decisions under uncertainty and flexibility. Traditional NPV analysis using tools such as Discounted Cash Flow (DCF) model assumes that once an investment decision has been made, managers have no control over the outcome and they remain passive throughout the life of the project. Most corporate projects, however, have a great deal of flexibility in terms of their execution. This course will help students develop skills to identify and analyze real options so that they may approach real world corporate investment decisions in a strategic manner. This course may be used to fulfill the requirement for an options course in the MS (Finance) program. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FNCE 6411 - International Corporate Governance**

Discusses the structure and goals of the modern corporation, the primary governance mechanisms used to help companies achieve these goals, and how and why these roles, goals, and mechanisms vary across nations. The topics to be covered in the course include how share

ownership, particularly by institutional shareholders, managerial compensation and board of director activities are being used to improve corporate governance systems. The class compares the Codes of Best Governance Practices from several countries as well as recent innovations in individual company governance rating systems. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Note: Students cannot receive credit for both FNCE 6411 and INTB 6411. Cross-listed with INTB 6411. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 6420 - Mergers and Acquisitions**

Examines the processes and decisions by which mergers, takeovers and other corporate restructuring occur, the transactions occur. Analyzes merger and acquisition decisions as part of strategic decision making, and how firms are valued in mergers. Discusses the market for corporate control and the public policy implications of mergers and corporate governance. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 6450 - Short-Term Financial Management**

This course is a survey of methods for managing short term assets and liabilities. Specific topics include the analysis of the firm's liquidity and cash flow, banking relationships; collection and disbursement systems; management of short term investment and financing; management of receivables, payables and inventory; and short term forecasting. This course is affiliated with the Association of Financial Professionals, allowing students earning at least a 'B' to sit for the Certified Treasury Professional (CTP-A) exam. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 6460 - Emerging Market Finance**

This course aims to explore key emerging market finance issues from the perspectives of corporations, investors and markets. Emerging economies are deemed to be the engine of growth opportunities in the world economy. However, compared with developed markets, they typically have some unique features in their economic systems and financial markets, and thus different risk and return characteristics, leading to special considerations of capital budgeting, financing and investing in these economies. This course is to help develop a better understanding of financial markets, corporate finance and investments in emerging economies, with case studies on some major emerging markets (e.g., China, India). Prereq: BUSN 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with INTB 6460. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 6470 - Behavioral Finance**

Over the past several decades, the field of finance has developed a successful paradigm based on the notions that investors and managers were generally rational and the prices of securities were generally "efficient." In recent years, however, anecdotal evidence as well as theoretical and empirical research has shown this paradigm to be insufficient to describe various features of actual financial markets. In this course we examine how the insights of behavioral finance complements the traditional paradigm and sheds light on the behavior of asset prices, corporate finance, and various Wall Street institutions and practices. Prereq: BUSN 6640. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 6480 - Financial Modeling**

Develops and implements financial models for purposes of financial planning and decision making. This course is intended to allow the student to increase her or his knowledge and skill in the development of various types of computer-based financial planning models. The students are exposed to the uses of a variety of computer software packages that can be used for modeling financial planning problems. Prereq: BUSN 6640, knowledge of computer and spreadsheet software. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 6800 - Special Topics**

Experimental course offered irregularly for the purpose of presenting new subject matter in finance. Prerequisites vary depending upon topics covered. (Consult the 'Schedule Planner' for semester offerings.) Prereq: BUSN 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **FNCE 6802 - Foundations of Commodities**

This course introduces students to the physical aspects of commodities and connects them to the financial markets in which commodities are traded. Fundamental concepts and terminology necessary for understanding commodity production, transportation, economics, financial analysis and marketing are described. Supply chains for several specific commodities are reviewed in detail, as examples of the production and market structure knowledge needed to be successful professional participants in commodity trading capacities. The course also serves a foundation for more focused education in the specific commodity sectors, as well as the applied use of marketing and financial trading concepts learned in other courses. Cross-listed with FNCE 4802 and CMDT 4802/6802. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNCE 6840 - Independent Study: FNCE**

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 8

## **FNCE 6995 - Travel Study**

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FNCE 8990 - Dissertation Development**

Supports development of a dissertation in conjunction with a student's advisor. Repeatable. Max hours: 15 Credits. **Semester Hours:** 1 to 15

## **Fine Arts**

### **FINE 1000 - Fostering Creativity**

Through discussions, readings, writings and creative investigations, students will delve into theoretical and experiential approaches to creativity and consider how different kinds of creativity and passions can be identified, cultivated and leveraged in their current and future academic and professional lives. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 1001 - Introduction to Art**

The course introduces visual analysis and critical examination of art from prehistory to modern times. Through reading, vocabulary development, group discussions, tests, and research projects, students will learn how to appreciate art and critically evaluate form, content, and context. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-AH1. **Semester Hours:** 3 to 3

### **FINE 1002 - International Perspectives through Animation**

This course is a look at world political, economic, social, and technological challenges through the lens of animation and visual storytelling. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 1003 - Creative Coding**

Through discussions, readings, writings, and creative investigations, students will identify and evaluate the digital tools and software present in everyday life while they explore and learn the basics of computer code and the power of code as a creative tool. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **FINE 1100 - Drawing I**

This course explores the act of drawing as a process of visual thought as an initial step to artistic expression. Students will develop an understanding of the basic principles of drawing as a way of learning to see. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 1111 - First-Year Seminar**

Restriction: Restricted to Freshman level students. Repeatable. Max Hours: 3 Credits.

**Semester Hours:** 1 to 3

## **FINE 1120 - Photographic Fundamentals**

Students learn fundamentals of digital photography through creative assignments that promote a broad understanding of the photographic medium. Topics include digital camera operation, sizing and resolution, principles of design, and interpreting photographic meaning. This course is designed for non-art majors. Restriction: Open to all students except FINE-BFA & BA. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 1140 - Topics in Photography**

Repeatable. Max hours: 9 Credits. **Semester Hours:** 1 to 3

## **FINE 1150 - Introduction to Darkroom Photography**

Students learn traditional, film-based photographic practice. Topics such as camera functions, film processing, black and white darkroom printing, and alternative darkroom techniques are explored through demonstrations, critiques, readings, and discussions of historical and contemporary photography. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 1400 - Two Dimensional Design**

Focuses on the concepts and visual elements of all forms of two-dimensional art. Students gain an understanding of basic design principles as they analyze and visually articulate formal concerns in viewing contemporary and historical artworks as applied to studio problems. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 1450 - Visual Culture: Ways of Seeing**

A core course for majors and non-majors Visual Culture: Ways of Seeing explores how the meaning of imagery is encoded in cultural settings and transforms globally through changing technology and is integrated into daily life. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-AH1. **Semester Hours:** 3 to 3

## **FINE 1500 - Three-Dimensional Design**

Students explore the elements of art and the principles of design applied to three-dimensional design while developing an understanding of material properties, techniques, processes and

tools. Creative practice is accompanied by written, theoretical and verbal critical thinking skills. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 1810 - PREDAC: 3D Foundations**

A lecture/lab course that explores the foundations of creating digital 3D content. Primary focus is an introduction to current 3D software. Class lectures, demonstrations and hands-on application will expose the student to the expectations for commercial high-end 3D animation production. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 1812 - 3D Computer Graphics: Producing Animation**

An online course that explores the theory, practices and fundamentals of the producing 3D animation. Students will explore the foundations of the animation process Note: Offered through Extended Studies. Must provide sufficiently powered computer. See [www.cu3d.org](http://www.cu3d.org) Computer Graphics Certificate for details. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 1820 - PREDAC: Animation Foundations**

A lecture/lab course that explores the foundations of animation. Primary focus is an introduction to foundational animation techniques and methods. Class lectures, demonstrations and hands-on application will expose the student the expectations for high-end animation production. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 1822 - 3D Computer Graphics: Introduction to Digital 3D**

An online course that explores the foundations of creating digital 3D content. Primary focus is an introduction to current 3D software. Note: Offered through Extended Studies. Must provide sufficiently powered computer. See [www.cu3d.org](http://www.cu3d.org) Computer Graphics Certificate for details. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2020 - Drawing II**

Students explore complex problems in the representation of space and learn observational drawing methods. Perceptual and constructed perspective is utilized to visualize three-dimensional form. Contemporary and historical artworks are studied with emphasis on the design of effective compositions. Prereq: FINE 1100. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2030 - Life Drawing**

This course introduces the student to the human figure, addressing anatomy, movement and proportion. Discussion of historic and contemporary critical methods supplement studio practice. Exploring a variety of drawing media, students expand their drawing skills and relate

the principles of composition and design to figure drawing. Prereq: FINE 1100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2105 - PRE-DIGD – Human-Centered Design, Innovation and Prototyping**

Introduces collaborative interdisciplinary design and innovation from a human perspective. Using the wide array of Inworks prototyping facilities, teams of students will design and implement human-oriented projects of increasing scale and complexity, in the process acquiring essential innovation and problem-solving skills. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2140 - Topics in Photography**

Repeatable. Max hours: 9 Credits. **Semester Hours:** 1 to 3

### **FINE 2155 - Introduction to Digital Photography**

Students learn digital image manipulation, input and output strategies, and digital camera functions through assignments that emphasize conceptual development. Presentations, readings, projects and class discussions help students gain an understanding of the role of digital imaging in contemporary photography. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2200 - Painting I**

This course is an introduction to the language of painting. Students will learn to develop composition in layers, working from value to color and from direct observation to abstraction while exploring the range of visual possibilities that painting offers. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2405 - Introduction to Digital Design**

A project-based exploration of the design potentials of vector, raster and motion based digital media. Through project critiques, discussion and demonstration students will create projects that examine technology as an art medium and a design strategy. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2406 - Introduction to Digital Art & Imaging**

A project-based exploration of vector, raster, and motion-based digital media. Through project critiques, discussion and demonstration students will create projects explore the creative and expressive potential of digital media. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2415 - Typography Studio**

A studio course that teaches principles of typography and organization that is the foundation of design and artistic practice. Through drawing, editing, and moving typographic forms, students will create projects that examine how typography is used to create meaning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2420 - The Language of Design : What Makes Design Work**

Through lectures, readings and discussions students explore essential contemporary design movements and designers and their effects on design, visual culture and communication. In addition, students learn and practice critical thinking skills and have the opportunity to learn and practice design processes and problem solving techniques. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **FINE 2425 - Essential Type-Design Applications**

A studio devoted to learning the essential design-software needed to complete basic graphic design projects. Through lectures and creative projects students will learn how to create, manipulate, and prepare various types of art files for print or digital publishing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2428 - Introduction to Scientific Media Design**

Through lectures, writings, readings, and discussions students will be introduced to Scientific Media Design as a profession as well as the history and emerging directions in the field. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2500 - Bronze Casting**

Students learn lost wax casting with ceramic shell investment and bonded sand. Modeling, foundry work, centrifugal casting and welding for cast metal are introduced, as is steel fabrication and mixed media. Individual vocabularies are explored and design skills acquired. Prereq: FINE-BFA APC: FINE 1500. Repeatable. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2510 - Wood and Metal Sculpture**

Wood, metal fabrication and introduction of the found object are premise for the exploration of individual visual vocabularies. Investigation and design are applied towards developing conceptual ideas while students advance skills in the metal and wood studios. Prereq: FINE-BFA APC: FINE 1500. Repeatable. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2600 - Art History Survey I**

A lecture course studying Western and non-Western art from prehistory to medieval times, including major artists and periods. Through visual analysis, vocabulary acquisition, exams, and



writing assignments, students demonstrate knowledge of historical developments and an ability to analyze the arts. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2610 - Art History Survey II**

A lecture course studying Western and non-Western art from the Renaissance to today, including major artists and periods. Through visual analysis, vocabulary acquisition, exams, and writing assignments, students demonstrate knowledge of historical developments and an ability to analyze the arts. Prerequisite applicable only for FINE-BA majors: FINE 2600. No prerequisite for all others. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2812 - 3D Computer Graphics: 3D Surface Modeling**

An online course focused on mastery of creating surface models for digital 3D content. Students will develop skills/knowledge about the processes and techniques for building complex 3D objects. Note: Offered through Extended Studies. Must provide sufficiently powered computer. See [www.cu3d.org](http://www.cu3d.org) Computer Graphics Certificate for details. Prereq: FINE 1810 or 1812 and 1820 or 1822. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2832 - 3D Computer Graphics: 3D Lighting and Rendering**

An online course focused on mastery of lighting the digital 3D environment. Students will develop skills/knowledge about the processes and techniques for creating realistic 3D lighting. Note: Offered through Extended Studies. Must provide sufficiently powered computer. See [www.cu3d.org](http://www.cu3d.org) Computer Graphics Certificate for details. Prereq: FINE 2812 and 2822. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2852 - 3D Computer Graphics: 3D Character Creation**

An online course focused on mastery of skills for creating digital 3D characters. Students will develop skills/knowledge to create digital characters. Note: Offered through Extended Studies. Must provide sufficiently powered computer. See [www.cu3d.org](http://www.cu3d.org) Computer Graphics Certificate for details. Prereq: FINE 2812 and 2822. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 2995 - Travel Study**

Created for students doing travel study in a foreign country. Students register through the Office of International Education. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 1 to 15

### **FINE 3010 - Illustration I: Image Making**

In a demonstration of expressive media, students develop their own point-of-view and style. Students work in a variety of media while learning historic and contemporary trends in illustration. Prereq: FINE 1100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3014 - The Graphic Novel Workshop**

This course introduces students to the visual language of the graphic novel through the creation of sequential imagery and page development. Students will delve into the pictorial methods found in both historical and contemporary comic books, Manga and alternative cartooning. Prereq: FINE 1100; Prereq: FINE-BFA ILS: FINE 2030. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3030 - The Media of Drawing**

This course introduces students to the notion of drawing from life through an exploration of drawing methods/materials in the creation of artist's books- including learning various binding techniques and studying movement and juxtaposition as we draw in and from these books. Prereq: FINE 1100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3040 - Color Theory: Studio and Screen-Based Practice**

This hybrid course delves into how color is essential to traditional studio-based and digital media artists through focusing on visual color and light perception, color mixing with pigment and digital applications, and the interaction of color. Prereq: FINE 1100, 1400. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3050 - Figure Painting**

This course is an exploration of representing the human form in pictorial space. Students will gain a knowledge of figural color, proportion, scale and space; and will understand the conceptual and visual weight carried by expressive gesture and figural form. Prereq: FINE 2030 and FINE 2200. Prereq FINE-BFA PND: FINE 1100, FINE 1400, FINE 1500, FINE 2155, FINE 2600, FINE 2610. Prereq PNDW-MIN: FINE 2200. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3115 - Mixed Media and Photography**

Students create artwork using techniques that combine photography and mixed media. Topics include expanding the photograph to a 3-dimensional form, working with light-sensitive materials, and manipulating the print surface. Students develop creative concepts that are enhanced by cross-disciplinary methods. Prereq: FINE 2155. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3130 - Photography, Optics and Perspectives in Italy**

In this study abroad seminar course, students develop an understanding of their work within the context of the history of art and photography, particularly the artistic and scientific breakthroughs of the Renaissance, by exposing them to strategies and theories exemplified by the remarkably diverse and historically significant artwork that is available in collections in Florence, Italy. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3135 - Historic Photographic Processes in Italy**

Investigates the relationship between critical concepts and alternative photographic processes in the unique cultural and artistic setting of Florence, Italy. Students create images using historic photographic methods such as salted paper, P.O.P., albumen, photo-polymer gravure and bromoil. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3156 - Photography Studio and Lighting**

Students learn lighting techniques that inform the conceptual and aesthetic qualities of their photographs. Topics covered include studio practice; location photography; commercial business practices; shooting and lighting techniques; and professional presentation. Prereq FINE-BFA PHO: FINE 1100, FINE 1150, FINE 1400, FINE 2155, FINE 2600. Prereq: FINE 2155. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3160 - Color and the Constructed Image**

Students explore traditional color photography, concept development and expressive uses of the medium. Topics include chromogenic printing, color theory, and 4x5 technique in assignments that focus on constructed imagery. Students learn about the creative impact of color on photographic representation. Prereq FINE-BFA PHO: FINE 1100, FINE 1150, FINE 1400, FINE 2155, FINE 2600. Prereq: FINE 1150. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3161 - The Silver Fine Print**

Students learn advanced black and white darkroom techniques while translating ideas into photographic form. Techniques include the zone system, split filter printing, toning, montage printing, and film/paper choices. Students gain insight into photographic artists, techniques, and movements. Prereq: FINE-BFA PHO FINE 1100, FINE 1150, FINE 1400, FINE 2155, FINE 2600. Prereq: FINE 1150. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3162 - The Digital Fine Print**

Students learn the fine art of digital printing as it relates to photographic practice and theory. Assignments focus on conceptual development, advanced image manipulation, workflow, color management, and digital ink jet printing. Students gain insight into the role of digital imaging in contemporary culture. Prereq: FINE-BFA PHO: FINE 1100, FINE 1150, FINE 1400, FINE 2155, FINE 2600. Prereq: FINE 2155. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3171 - Concepts and Processes in Photography**

Students develop skills in alternative photographic techniques. Processes covered include camera-less and pinhole photography, reticulation, non-silver printing, liquid emulsions, digital/traditional cross-manipulation. Students gain insights into the relationship between ideas and experimental ways of creating images. Spring only. Prereq: FINE-BFA PHO: FINE 3161. Prereq: FINE 1150. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3172 - Photography and Community**

Students learn strategies for creating visual narratives through photographic projects that involve the Denver community. Projects incorporate service learning, documentary photography, text and image, digital manipulation, digital printing, scanning, and handmade artist books. Spring only. Prereq: FINE-BFA PHO: FINE 3161, FINE 3162. Prereq: FINE 2155. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3200 - Intermediate Painting and Drawing**

In this course students develop a body of work that expands on previous course work, to make the transition from assignment-based work to an independent body of work, and to prepare for advanced level study in painting and drawing. Prereq: FINE 2200. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3240 - Abstract Painting and Drawing**

This course explores the methods of abstraction as applied to painting and drawing. Through developing a body of paintings and drawings, students will gain an understanding of complex formal structures in the development of their work. Prereq: FINE 1100, FINE 2200. Prereq FINE-BFA PND: FINE 1100, FINE 1400, FINE 1500, FINE 2155, FINE 2200, FINE 2600, FINE 2610. Prereq PNDW-MIN: FINE 2200. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3300 - Painting, Drawing and the Printed Image**

This course explores the role of technology in the history of painting/drawing alongside studio practice. Students produce works that explore personal symbolism through the combination of graphically printed and hand-produce marks while utilizing technology as a tool in painting/drawing. Prereq: FINE 1100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3340 - Topics in Studio Art**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

## **FINE 3342 - Topics in Studio Art**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **FINE 3343 - Topics in Studio Art**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **FINE 3400 - Designing for Web and Mobile Apps**

In a design laboratory, students learn how to design for the web and mobile devices. Through lectures, writings, readings, discussion and critiques, students will learn about HTML, CSS, CMS, web hosting, analytics and the principles of UX/UI. Restriction: Restricted to sophomore standing or above. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3404 - Typography II**

A design laboratory that teaches advanced principles of typography including multiple page documents and complex typographic systems for print and screen. Students will create complex design projects that explore the relationship between type and image. Prerequisite: FINE 2415. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3405 - Introduction to Digital Video**

A studio course for non-design-majors that focuses on the basics of storytelling using digital video. Through class projects, screenings, discussions and readings, students explore the concepts of montage and strategies to develop compelling video for artistic and commercial purposes. Prereq: FINE-BFA APC: FINE 2155. Note: class may not be taken by Digital Design or Transmedia majors for credit toward degree. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3410 - Illustration II: Digital Media**

Students consider the diverse perspectives of clients, viewers, and context while developing concept art and imaginative illustrations. Digital workflows, visual research, and an iterative process are emphasized. Prereq: FINE 3010. Restriction: FINE-BFA ILS or FINE-BFA APC. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3414 - Motion Design I**

A course devoted to understanding time based imagery that focuses on utilizing video and motion graphics as a creative communication tool. Students create projects that explore topics using video, animation, time and motion using a non-linear digital editing software. Restriction: Restricted to FINE-BFA DIG or DIGD-MIN or FINE-BFA 3D ANI or the SCOM certificate. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3415 - Design Studio I**

In a design laboratory students learn to turn ideas into visual solutions through the application of design principles. Through lectures, writings, readings, discussion and critiques of projects assigned students will build visual literacy in relation to digital design. Restriction: Restricted to FINE-BFA DIG or DIGD-MIN. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3417 - Design Research**

This seminar class examines methods and processes used by designers to better understand the content they are asked to communicate while addressing increasingly complex social, technological and economic problems. Class topics will include: user interface and experience design, demographics, storyboarding, branding, and concept mapping. Restriction: Restricted to FINE-BFA DIG or DIGD-MIN. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3420 - Printing Preparation and Process**

Through print shop visits, creating, manipulating, and preparing various types of art files for print or digital publishing, students will explore the history, various processes, and file preparation that are essential to producing final designed products. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3424 - Interactive Media**

A foundational interactive design workshop exploring how to convey message and deliver information. Through critiques of projects, discussion and research, students will learn principles of user interface design, aesthetics and structure including their potential cultural impact. Restriction: Restricted to FINE-BFA DIG or DIGD-MIN. Prereq: FINE 3414, 3415, 3417; DIGD-MIN and FINE 3414, 3415. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3434 - 3D Motion Design**

A course devoted to 3D as a medium for creating works of art. Through demonstration, discussion, readings and project based explorations, students will learn to navigate and create in the 3D digital environment. Restrictions: Restricted to FINE-BFA DIG or DIGD MIN. Prereq: FINE 3444, 3464. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3444 - Interactive Media II**

An intermediate interactive design workshop devoted to using interactive design to solve communication and information problems at scale. Through investigations, readings and discussions students will create projects that explore user experience design, accessibility, and advanced research techniques. Restriction: Restricted to FINE-BFA DIG. Prereq: FINE 3424, 3454. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3450 - Digital Painting**

Digital Painting is a studio designed for student exploration of artistic expression using digital tools for traditional painting and illustration techniques. Prereq: FINE 2200. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3454 - Motion Design II**

An intense course devoted to using time and motion as a medium for communicating ideas and information. Through creative investigations, readings and discussions students explore linkages between non-linear editing, animation and 3-dimensional animation as used in motion graphics. Restriction: Restricted to FINE-BFA DIG. Prereq: FINE 3414, 3415, 3417. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3464 - Design Studio II**

In a studio environment students will develop advanced projects using animation, interactivity and motion graphics to create innovative solutions to design problems. Students will learn to apply design theory to practice through discussion, critiques and assigned projects. Restriction: Restricted to FINE-BFA DIG. Prereq: FINE 3424, 3454. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3474 - Narrative and Experience**

A workshop-laboratory that focuses on narrative structure and its ability to create, control and manipulate viewer and user-experience. Through creative explorations, students will examine issues of identity, reception and audience and develop approaches to creating user-centered works of art/design. Restriction: Restricted to FINE-BFA DIG. Prereq: FINE 3444, 3464. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3500 - Installation Art**

Students learn to modify the way a particular space is experienced through material intervention in everyday public or private spaces. Material use incorporates found, fabricated and new media. Prereq FINE-BFA APC: FINE 1100, FINE 1400, FINE 1500, FINE 2155, FINE 2600, FINE 2610, FINE 2500, FINE 2510. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3505 - Environmental Art**

Students create site-specific work to exist in a certain place or describe a specific location. This involves temporary outdoor landscaping combined with sited sculptural elements and gallery exhibition. The formal, political, historical, public, ecological, geographical and social context of the urban/rural environment will be explored. Prereq: FINE-BFA APC: FINE 1500. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

## **FINE 3510 - Mold Design & Casting**

Mold design and construction using rubber, alginate and plaster is introduced for casting in metal, resin, glass, synthetics, concrete, plastic, paper and biodegradable materials. Drawing is included. Exploration of life size and small-scale castings. Prereq FINE-BFA APC: FINE 1500. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3515 - Public Art**

Students connect with professional/visiting artists installing public art works in Denver. Public relations, installation techniques, curatorial and administration skills are developed. Students learn to establish, maintain and promote public art collections. Prereq FINE-BFA APC: FINE 1500. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3520 - Sculpture: Contemporary Artists and Concepts**

Provides the art student (sculpture majors and non-majors) with a focused opportunity to look at contemporary sculpture, installation and performance art, and to examine the philosophical issues, processes, and methods, motivating practicing artists today. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

## **FINE 3525 - Prototyping Sculpture**

This course will focus on contemporary professional practices and will cover topics such as project planning, an introduction to computer-aided design, fabrication, and digital outsourcing for the production of sculptural works. Prereq: FINE: 1500. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3530 - Electronic Art**

Video, sound and projection in contemporary sculpture. Introduction to sensors and motors and data visualization. A bridge between the digital laboratory and the sculpture studio in the context of object making, gallery and networked media. Prereq FINE-BFA APC: FINE 1500, FINE 3405. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3550 - Iron Casting**

Students learn traditional and innovative mold making techniques for casting iron. Casting techniques include working with found objects, lost wax, ceramic shell and sand molds. Furnace design and equipment fabrication are researched. Public performance is integral to the class. Prereq FINE-BFA APC: FINE 1500. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 3555 - Concepts in Sculpture**



This course addresses varying topics and trends in sculpture. Students produce work focused on issues in the professional field and develop their voice as an artist through thematic exploration. Course content rotates each semester to cover the dynamics of the field. Prereq: FINE-BFA APC: FINE 1500. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 3

### **FINE 3556 - Concepts in Painting and Drawing**

This course addresses topics and trends in painting and drawing. Students produce work focused on issues in the professional field and develop their creative voice through thematic exploration. Course content rotates each semester to cover the dynamics of the field. Prereq: FINE 2200. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 3

### **FINE 3557 - Concepts in Illustration**

This course addresses varying topics and trends in illustration. Students produce work exploring contemporary issues in the professional realm and develop their distinctive illustrative voice through multiple media. Course content rotates each semester to cover the dynamics of the field. Prereq: FINE 2010. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **FINE 3630 - History of Photography**

Students examine the history of photography from its origins to the present. Emphasis is placed on photography as an artistic medium. Topics covered include important movements, photographers, and technical innovations, as well as photographer's broader role in visual culture. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3631 - Photography: Theory and Criticism**

Students investigate the historical texts of photographic criticism. Readings relate to photography as a fine art form, concentrating on 1970 to the present. Through discussions, readings and critical writing, students examine and appreciate the significance of photographic theory. Spring only. Prereq: FINE-BFA PHO: FINE 3630. Restriction: All other students must be at sophomore-, junior-, or senior-level standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3635 - Photography Now**

Students investigate trends in fine art photography from 1990 through the present. By examining current topics, styles, and techniques students gain insights into contemporary photographic practice and its relationship to the history and future of the medium. Prereq: FINE-BFA PHO: FINE 3630. Restriction: All other students must be at sophomore-, junior-, or senior-level standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3640 - Topics in Art History I: Art Before Modernism**

Variable: Art History lecture course pertaining to art before Modernism. Prereq FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **FINE 3644 - Topics in Art History II: Modern and Contemporary**

Variable: Art History lecture course pertaining to art since Modernism. Prereq FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **FINE 3775 - Asian Art, 1850 to Now**

A lecture-based course about developments in art and architecture of China, Japan, and Korea after 1850. Prereq FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3814 - Digital 3D Methods: Motion Graphics for Animators**

An online course is an introduction to Motion Graphics, devoted to understanding time based imagery that focuses on utilizing video, typography and 3D content as a creative communication tool. Students will create projects that explore video, animation, time and motion. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3815 - Storyboarding for Cinema and Game Previsualization**

A lecture/lab course covering the foundations of the cinematic storyboarding process/techniques used for previsualization in the film, entertainment design and game industries. Students will develop skills/ knowledge for creating storyboards study and understand film theory, storytelling, film language and grammar, and filmic composition. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 3939 - Internship**

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **FINE 3995 - Travel Study**

Created for students doing travel study in a foreign country. Students register through the Office of International Education. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 1 to 15

### **FINE 4001 - Illustration III: Investigative Methods**

Students will learn to use writing, research methods, and market analysis to develop original and unique approaches to illustration. Projects will explore how media choices and production processes impact potential markets and responses from the public. Prereq: FINE 3410. Restriction: Restricted to FINE-BFA ILS majors within the College of Arts & Media. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4002 - Illustration IV: Thesis Development**

Students will examine historical and contemporary trends in illustration while developing a research topic and writing a thesis paper. Students will produce new work and illicit responses from faculty and outside industry mentors as they begin to prepare a professional illustration portfolio. Prereq: FINE 4001. Restriction: Restricted to FINE-BFA ILS majors within the College of Arts and Media. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4003 - Illustration BFA Thesis**

Students will present their thesis project proposal, create original illustrations for their BFA Thesis exhibition and develop a professional illustration portfolio. Students will be expected to document their process and implement a promotional plan in order to build an audience for their work. Prereq: FINE 4002. Restriction: FINE-BFA ILS. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4020 - Anatomy for the Artist**

An intensive study of the human figure, focusing on its structure, movement and proportions. Skeletal and muscular systems are explored in depth using the classic texts of artistic anatomy to enhance students' drawings from observation. Prereq: FINE 2030. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4050 - Design in a Global Workplace**

Through intensive participatory workshops, study tours, and lectures this class examines the advantages of interdisciplinary community-based collaboration. This class also examines the complexities of cross discipline collaborations including multiple professional agendas, political and business establishments and the needs of the community. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 6

### **FINE 4140 - Topics in Photography**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **FINE 4195 - Advanced Photography I**

Students create an independent body of photographic work that integrates sophisticated concepts with technical mastery. Through critiques, presentations and discussions, students relate subject matter to historical and contemporary context. Students build expertise in the area of professional development in photography. Prereq: FINE-BFA PHO: FINE 3156, 3160, 3171, 3172, and 3630. Prereq: FINE 3161, 3162, 3171. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4196 - Advanced Photography II**

Students create an independent body of photographic work that integrates sophisticated concepts with technical mastery. Through critiques, presentations and discussions, students relate subject matter to historical and contemporary context. Students build expertise in the area of professional development in photography. Prerequisite: FINE 4195. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **FINE 4215 - Interdisciplinary Studio**

This is the first level of advanced studies in art practices where students create a body of work that expresses a more complex individual vision. Students learn to develop their creative work with self-selected materials and processes in support of focused concepts. Prereq: FINE 3500. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **FINE 4340 - Topics in Studio Art**

Repeatable. Max hours: 12 Credits. **Semester Hours:** 1 to 3

### **FINE 4350 - Topics in Digital Design**

Specialized topics are offered in new design technologies, theories, processes and conceptual thinking. Course subjects are unique and changing semester to semester. Max hours: 6 Credits. **Semester Hours:** 1 to 3

### **FINE 4400 - Design Studio III**

Set up as a collaborative studio, students learn to identify problems in the cultural and urban environment and design solutions that address those problems. Through discovery and research students will learn how design can be a catalyst for change. Restriction: Restricted to FINE-BFA DIG or DIGD-MIN or FINE-BFA 3D ANI or SCOM. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4411 - Immersive Storytelling I**

This theory/research-oriented course teaches students in media and technical fields how to tell stories interactively using 360-degree video and computer-generated scenes that subjects

experience through leading virtual reality headsets. We will touch on creating content for larger format immersive experiences. Restriction: Sophomore standing or higher. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4420 - Interactive Media III**

An advanced interactive design workshop where students will use current industry tools to explore a range of topics such as emerging technologies, design interactive prototypes, and experiential design. Through prototyping, discussion, readings, and critiques, students will create unique projects that explore contemporary and futurist topics. Prereq: FINE 3444. Restriction: Restricted to FINE-BFA DIG. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4421 - Immersive Storytelling II**

This research-oriented course advances student skills in the media and technical issues of telling stories interactively using 360-degree video and computer-generated scenes that subjects experience through leading virtual reality headsets. Creating content for larger format immersive experiences is discussed further. Prerequisite: FINE 4411. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4425 - Motion III**

An intense workshop-laboratory devoted to advanced motion design techniques. Through creative investigation, the study of motion theory and hierarchy, compositing, filming techniques, broadcast parameters, aesthetics, typography and technical issues students will develop the in-depth knowledge necessary to excel as design professionals. Prereq: FINE 3454. Restriction: Restricted to FINE-BFA DIG. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4434 - Virtual Landscapes**

In a studio environment students will explore place in relation to contemporary digital art practice. Through readings, lectures and production of projects assigned, students will create work that addresses the natural, urban and virtual environment. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4435 - Nudge: Behavioral Design 1**

A studio course where students learn to develop 'nudge' solutions through the use of behavioral methods and theories. A 'nudge' is an attempt to influence people's choices and behavior in a predictable way without limiting their options or significantly changing incentives. Through field trips and observation, students will gain knowledge and skills in the field of behavioral design, including dual cognitive processing, choice architecture, behavioral mapping, and cognitive biases. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 4446 - Visualization & Infographics**

In our data and information-rich society, visual representations of data can be useful for making sense of available information and fostering understanding. This course engages students in critique existing work and encourages a thoughtful design process toward creation of information graphics and simple data/information visualizations. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

## **FINE 4447 - Presenting Science**

Sophisticated graphical components can help a viewing audience understand complex scientific information more clearly. This project-based learning course engages students in creation of thoughtful graphic explanations of science for the purpose of enhancing scientific presentations and audience comprehension. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 4448 - BioMedical 3D Animation**

3D Animation can be a powerful tool for telling stories rooted in science and medicine. This course provides opportunity to learn from existing animated works while honing skills in storyboarding, narrative and 3D animation with focus on biology, science, and health education. SMD students explore and research BFA thesis topics. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

## **FINE 4450 - Social Engagement by Design**

Through lectures, discussions and conducting onsite research in international settings, students will become familiar with professional practitioners' Perspectives and experiences in the field of socially engaged design while interrogating current practices, policies, and expectations that inform community engagement and by Design. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 6

## **FINE 4480 - Design Thesis Research**

Through lectures, studio visits and research, students will engage the profession and examine the role of the artist as a designer. Projects will focus on resumes, interview techniques, portfolio and business practices to prepare students for entering the design profession. Restriction: Restricted to FINE-BFA DIG Prereq: FINE 4400. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 4495 - Design Thesis Project**

Through critique, research, and writing students will critically explore a thesis topic and develop professional quality visual solutions. Students will create work that expresses their personal artistic vision in relation to significant contemporary and historical artists and practice.

Restriction: Restricted to FINE-BFA DIG Prereq: FINE 4480. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4505 - Sculptural Drawing**

Students apply traditional and mixed media drawing skills, photography and digital reproduction to depict the sculptural object in two and three-dimensional space. Students learn to construct small-scale models and develop sculpture proposals. Drawing as sculpture medium is explored. FINE BFA APC: FINE 1500, FINE 3405. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4515 - Advanced Art Practices**

Students in this course develop a body of work that expresses complex individual vision across media. Students learn to develop their artistic practice with self-directed processes in support of focused concepts in multiple studio areas. Prereq: FINE 3500. Coreq: FINE 4950. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **FINE 4522 - Interdisciplinary Art in Ireland**

The interdisciplinary course introduces students to the methods and concepts of contemporary site-specific art as critical theory through lecture and critique and as practice in the rural/urban landscape and studio along Ireland's County Clare coastline in the Burren region. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **FINE 4523 - Topics in Art History I: Art Before Modernism**

Variable: Art History lecture course pertaining to art before Modernism. Prereq: FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **FINE 4524 - Topics in Art History II: Modern and Contemporary Art**

Variable: Art History lecture course pertaining to art since Modernism. Prereq: FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **FINE 4525 - Museum Studies**

A seminar about museums and art galleries as institutions for the preservation and exhibition of cultural materials. Through writing assignments, discussions, site visits, and analysis, students will demonstrate knowledge and critical thinking on the display of art. Prereq: FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

## **FINE 4600 - History of Modern Design:Industrial Revolution-Present**

A lecture course involving the history of design from the Industrial Revolution to the present. The course will address the graphic design, typography, architecture, "Decorative arts", and new media from each period/major design movement in that time frame. Prereq: FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 4610 - Pre-Columbian Art**

A lecture course on the art and architecture of Mesoamerica and the Andes before the Spanish conquest. Through visual analysis, vocabulary acquisition, discussion, exams, and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Prereq: FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Cross-listed with FINE 5610. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 4620 - American Art**

A lecture course on the art of the United States from colonial times to World War II. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Prereq: FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 4630 - History of Latin American Art:1520-1820**

A lecture course studying Latin American art of 1520-1820, including major artists and periods. Through visual analysis, vocabulary acquisition, exams, and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the arts. Prereq: FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Cross-listed with FINE 5630. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 4670 - Greek and Roman Art**

A lecture course on art and architecture from ancient Greece and Rome. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Prereq:



FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4680 - Art of the Middle Ages**

A lecture course on western European art and architecture from the fourth to the fourteenth centuries. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Prereq: FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only.

Restriction: All other students must be at junior or senior-level standing. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **FINE 4700 - Italian Renaissance Art**

A lecture course about developments in Italian Renaissance art and architecture. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Prereq:

FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4705 - Northern Renaissance Art**

A lecture course about developments in Northern Renaissance art and architecture. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Prereq:

FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4710 - Baroque and Rococo Art**

A lecture course on Italy, Spain, France, England, and the Netherlands during the seventeenth and eighteenth centuries. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Prereq: FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only.

Restriction: All other students must be at junior- or senior-level standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4712 - Applied Digital Media**

This lab course provides students with the opportunity to execute practical applications in the use of digital 3D media for commercial and/or non-profit venue. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **FINE 4730 - Arts of Japan**

A lecture course on selected themes and periods in Japanese art. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Prereq: FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4750 - Arts of China**

A lecture course on selected themes and periods in the arts and architecture of China. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Prereq: FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4770 - Art of India and Southeast Asia**

A lecture course on selected themes and periods in the arts of India and Southeast Asia. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Prereq: FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4790 - Methods in Art History**

A seminar about the various research methodologies in the history of art. Through reading, discussion, research, writing assignments, and presentations, students will demonstrate knowledge of art historiography. Prereq: FINE-BA: FINE 2600 and FINE 2610; ENGL 2070 or ENGL 4180 or ENGL 4280. Prereq: FINE-BFA: FINE 2600 and FINE 2610. All other students must be at junior- or senior-level standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4825 - Architectural Visualization**

A lecture/lab course covering the 3D visualization of architectural projects. Students will develop skills/ knowledge about the techniques for creating realistic 3D models, texturing, lighting, and presentation. Special emphasis will be placed creating realism in modeling, materials, lighting, and professional renderings. Prereq: FINE 1820. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4840 - Independent Study: FINE**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **FINE 4950 - Studio BFA Thesis**

Studio: BFA Thesis involves the preparation, exhibition and critical faculty response to students' Creative work. Course work focuses on contemporary trends in the arts, the commerce of the arts and the professional practices necessary to an artist' Self-promotion. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **FINE 4951 - Bachelor of Art Thesis**

A seminar that emphasizes creative and original research through the composition of a substantial paper on a topic in art history. Through discussion, presentations, and individual readings, students will demonstrate skills in research, writing, and critical thinking. Repeatable.

Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **FINE 4970 - Modernist Art**

A lecture course about developments in Modernist art and architecture from the late 18th century to 1960. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of the period's historical developments and an ability to analyze its art. Prereq: FINE 2600 and FINE 2610 for FINE-BA and FINE-BFA majors ONLY. Restriction: All other students must be at junior- or senior-level standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4980 - Gender in Contemporary Art**

This lecture course will address ways in which gender issues have affected the creation and study of visual arts since the early 20th century, with an emphasis on art and culture since World War II. Prereq: FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only.

Restriction: All other students must be at junior- or senior-level standing. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **FINE 4990 - Contemporary Art: 1960 to Present**

A lecture course about developments in art and architecture since 1960. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Prereq: FINE 2600 and FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 4993 - Topics Seminar in Art History I: Art before Modernism**

Variable: Art History seminar pertaining to art before Modernism. Prereq: FINE 2610 for FINE-BA and FINE-BFA majors ONLY. Restriction: All other students must be at junior- or senior-level standing. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **FINE 4994 - Topics Seminar in Art History II: Modern and Contemporary Art**

Variable: Art History seminar pertaining to Modern and contemporary art. Prereq: FINE 2610 for FINE-BA or FINE-BFA majors only. Restriction: All other students must be at junior- or senior-level standing. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **FINE 4995 - Travel Study**

Created for students doing travel study in a foreign country. Students register through the Office of International Education. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 1 to 15

### **FINE 5020 - Graduate Anatomy for Artists**

An intensive figure drawing course that focuses on structure, movement and proportions. Skeletal and muscular systems are studied using the classic texts of artistic anatomy. A research paper is also required. Prereq: Graduate Level Standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 5190 - Graduate Photography**

Graduate students create an independent body of photographic work that integrates sophisticated concepts with technical mastery. Through critiques, presentations and discussions, students relate subject matter to historical and contemporary context. Students build expertise in professional development in photography. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 5200 - Graduate Painting/Drawing I**

An intensive painting and drawing course for students who have completed their bachelor's degree in fine arts to further develop their technical and expressive means to implement their ideas. Self-directed studio is paired with studies in theoretical and critical analysis. Note: Students missing the first 2 classes of this course may be administratively dropped. Students will not be allowed to add course if they have missed the first 2 classes. Restriction: Restricted to CU Denver Graduate Students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 5210 - Graduate Painting/Drawing II**

This is the second level of graduate painting and drawing with a tutorial focus. Emphasis is placed on directed research and the development of significant body of original work reflecting student's expressive and theoretical concerns. Note: Students missing the first 2 classes of this course may be administratively dropped. Students will not be allowed to add course if they have missed the first 2 classes. Restriction: Restricted to CU Denver Graduate Students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 5340 - Topics in Studio Art**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **FINE 5446 - Visualization & Infographics**

In our data and information-rich society, visual representations of data can be useful for making sense of available information and fostering understanding. This course engages students in critique existing work and encourages a thoughtful design process toward creation of information graphics and simple data/information visualizations. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **FINE 5447 - Presenting Science**

Sophisticated graphical components can help a viewing audience understand complex scientific information more clearly. This project-based learning course engages students in creation of thoughtful graphic explanations of science for the purpose of enhancing scientific presentations and audience comprehension. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 5448 - BioMedical 3D Animation**

3D Animation can be a powerful tool for telling stories rooted in science and medicine. This course provides opportunity to learn from existing animated works while honing skills in storyboarding, narrative and 3D animation with focus on biology, science, and health education. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **FINE 5450 - Social Engagement by Design**

Through lectures, discussions and conducting onsite research in international settings, students will become familiar with professional practitioners' Perspectives and experiences in the field of socially engaged design while interrogating current practices, policies, and expectations that inform community engagement and by Design. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 6

### **FINE 5522 - Interdisciplinary Art in Ireland**

The interdisciplinary course introduces students to the methods and concepts of contemporary site-specific art as critical theory through lecture and critique and as practice in the rural/urban landscape and studio along Ireland's County Clare coastline in the Burren region. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **FINE 5523 - Topics in Art History I: Art Before Modernism**

Variable: Art History lecture course pertaining to art before Modernism. Restriction: Restricted to Graduate Students. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

## **FINE 5524 - Topics in Art History II: Modern and Contemporary**

Variable: Art History lecture course pertaining to art since Modernism. Restriction: Restricted to Graduate Students. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

## **FINE 5525 - Museum Studies**

A seminar about museums and art galleries as institutions for the preservation and exhibition of cultural materials. Through writing assignments, discussions, site visits, and analysis, students will demonstrate knowledge and critical thinking on the display of art. Restriction: Restricted to Graduate Students. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

## **FINE 5600 - History of Modern Design:Industrial Revolution-Present**

A lecture course involving the history of design from the Industrial Revolution to the present. The course will address the graphic design, typography, architecture, "Decorative arts", and new media from each period/major design movement in that time frame. Restriction: Restricted to Graduate Students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 5610 - Pre-Columbian Art**

A lecture course on the art and architecture of Mesoamerica and the Andes before the Spanish conquest. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate Students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 5620 - American Art**

A lecture course on the art of the United States from colonial times to World War II. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate Students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 5630 - History of Latin American Art:1520-1820**

A lecture course studying Latin American art of 1520-1820, including major artists and periods. Through visual analysis, vocabulary acquisition, exams, and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the arts. Restriction: Restricted to Graduate Students. Cross-listed with FINE 4630. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FINE 5632 - History of Digital Media**

Art historical survey and critical discourse of digital and electronic multimedia that covers the influences which have shaped this medium, its major contributors, the technological innovations and cultural impacts on society as an art form and commercial market form.

Restriction: Restricted to Graduate Students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 5644 - Topics in Art History**

Restriction: Restricted to Graduate Students. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **FINE 5670 - Greek and Roman Art**

A lecture course on art and architecture from ancient Greece and Rome. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art.

Restriction: Restricted to Graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 5680 - Art of the Middle Ages**

A lecture course on western European art and architecture from the fourth to the fourteenth centuries. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate level students. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **FINE 5700 - Italian Renaissance Art**

A lecture course about developments in Italian Renaissance art and architecture. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art.

Restriction: Restricted to Graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 5705 - Northern Renaissance Art**

A lecture course about developments in Northern Renaissance art and architecture. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art.

Restriction: Restricted to Graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 5710 - Baroque and Rococo Art**

A lecture course on Italy, Spain, France, England, and the Netherlands during the seventeenth and eighteenth centuries. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 5730 - Arts of Japan**

A lecture course on selected themes and periods in Japanese art. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 5750 - Arts of China**

A lecture course on selected themes and periods in the arts and architecture of China. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 5770 - Art of India and Southeast Asia**

A lecture course on selected themes and periods in the arts of India and Southeast Asia. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 5790 - Methods in Art History**

A seminar about the various research methodologies in the history of art. Through reading, discussion, research, writing assignments, and presentations, students will demonstrate knowledge of art historiography. Restriction: Restricted to Graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 5825 - 3D Architectural Visualization**

A lecture/lab course covering the 3D visualization of architectural projects. Students will develop skills/ knowledge about the techniques for creating realistic 3D Architectural visualization. Special emphasis will be placed creating realism in modeling, materials, lighting, and professional renderings. Intro level 3D/CAD skills req. Max hours: 3 Credits. **Semester Hours:** 3 to 3



### **FINE 5840 - Independent Study: FINE**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **FINE 5939 - Internship**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

### **FINE 5970 - Modernist Art**

A lecture course about developments in Modernist art and architecture from the late 18th century to 1960. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of the period's historical developments and an ability to analyze its art. Restriction: Restricted to Graduate Students. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **FINE 5980 - Gender in Contemporary Art**

This lecture course will address ways in which gender issues have affected the creation and study of visual arts since the early 20th century, with an emphasis on art and culture since World War II. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 5990 - Contemporary Art:1960-Present**

A lecture course about developments in art and architecture since 1960. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art.

Restriction: Restricted to Graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FINE 5993 - Topics Seminar in Art History I: Art before Modernism**

Variable: Art History seminar pertaining to art before Modernism. Restriction: Restricted to Graduate Students. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **FINE 5994 - Topics Seminar in Art History II: Modern and Contemporary Art**

Variable: Art History seminar pertaining to Modern and contemporary art. Restriction: Restricted to Graduate Students. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **FINE 5995 - Travel Study**

Created for students doing travel study in a foreign country. Students register through the Office of International Education. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 1 to 15

## **Foundations**

### **FNDS 5000 - Teaching as a Profession**

General foundations of education course for pre-service candidates. Provides a broad overview of the historical, sociological, philosophical, and legal foundations of education. Includes an examination of contemporary issues in schooling, school organizational patterns, and the professional rights and responsibilities of the teacher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FNDS 7420 - History and Philosophy of Education: Twentieth Century America**

Designed around selected themes from 20th century American social, political and economic history. Students examine such issues as immigration, racism, war, and social reform to identify the larger societal forces, ideas, and values that have shaped contemporary American education. Overriding purpose of the course is the development of an enlarged frame of reference from which to exercise professional judgment. Cross-listed with FNDS 5420. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **French**

### **FREN 1000 - Introduction to Cultures of the French- Speaking World**

Introduces students to the many cultures of the French-speaking world. Taught in English for accessibility to students from different colleges at the University. The countries studied are: France, its overseas departments (Guadeloupe and Martinique) and territories (Tahiti); Quebec; Senegal; and other African countries. Term offered: fall, spring. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-AH1. **Semester Hours:** 3 to 3

### **FREN 1001 - French Language I**

Introductory course in French language skills, in which basic grammatical structures are introduced, together with elementary vocabulary and cultural items that allow the student to carry on simple conversations in French. Note: Students may not enroll in any lower division (1000/2000) language skills course in which their level of proficiency exceeds that of the course. Students placing into a course through any means other than following the regular sequence must consult with an appropriate faculty member of the Dept. of Modern Languages prior to enrollment. No previous study of French is required. No co-credit with FREN 1010. Term offered: fall, spring. Max hours: 4 Credits. **Semester Hours:** 4 to 4

## **FREN 1002 - French Language II**

Second semester of elementary French language skills continuation of French Language I (FREN 1001). More complex grammatical structures are introduced together with appropriate vocabulary and cultural and literary readings that allow students to carry on more complex conversations. Note: This course assumes that students have passed FREN 1001 or 1010 or equivalent, or have taken one year of high school French, or possess equivalent proficiency. A grade of C- or higher in the previous French course is recommended for success in this course. Note: Students may not enroll in any lower division (1000/2000) language skills course in which their level of proficiency exceeds that of the course. Students placing into a course through any means other than following the regular sequence must consult with an appropriate faculty member of the Dept. of Modern Languages prior to enrollment. This course is not intended for native speakers. No co-credit with FREN 1020. Term offered: fall, spring. Max hours: 4 Credits.

**Semester Hours:** 4 to 4

## **FREN 2004 - French Language 4: Introduction to Advanced Studies**

This course is designed to review and further develop French language skills, to continue the study of Francophone cultures and to prepare students for advanced-level French studies. Note: This course assumes that students have passed FREN 2003 or 2110 or equivalent, or have taken three years of high school French, or possess equivalent proficiency. A grade of C or higher in the previous French course is recommended for success in this course. Note: Students may not enroll in any lower division (1000/2000) language skills course in which their level of proficiency exceeds that of the course. Students placing into a course through any means other than following the regular sequence must consult with an appropriate faculty member of the Dept. of Modern Languages prior to enrollment. This course is not intended for native speakers. No co-credit with FREN 2020. Term offered: fall, spring. Max hours: 3 Credits. **Semester**

**Hours:** 3 to 3

## **FREN 3010 - French Phonetics and Pronunciation**

Helps students acquire speech habits through knowledge of phonetics. Topics include the function of the speech organs, accurate production and recognition of sound, and the use of phonetic symbols. Note: Students with native or near-native level proficiency in French must consult with the French advisor before enrolling in this course. These students may, in some cases, take this course. The instructor of the course and/or the French advisor reserve the right to determine the level of linguistic proficiency of the student and his or her admission to the class by means of an oral interview and/or placement exam scores. Note: This course assumes that students have passed FREN 2004 or 2120 or equivalent, or have taken four years of high school French, or possess equivalent proficiency. Term offered: spring term of even years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **FREN 3020 - Conversation through Film**

Conversation course focusing on the exploration of the diversity of French and Francophone cultures through film. Oral practice methodologies will include small group discussions, short oral presentations and debates. Note: Students with native or near-native-level proficiency will not be allowed to take FREN 3020. The instructor of the course and/or the French advisor reserve the right to determine the level of linguistic proficiency of the student and his or her admission to the class by means of an oral interview and/or placement exam scores. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Note: This course assumes that students have passed FREN 2004 or 2120 or equivalent, or have taken four years of high school French, or possess equivalent proficiency. Term offered: spring term of odd years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 3050 - Advanced Grammar and Composition**

Rigorous review of grammar (including past and future tenses, conditional mood and nominal phrase), along with development of writing skills through analysis and discussion of selections from French writers. Through questions and written exercises, students familiarize themselves with vocabulary, spelling, syntax and grammar. Note: May be taken before or after FREN 3060. Students with native or near-native level proficiency in French must consult with the French advisor before enrolling in this course. These students may, in some cases, take this course. The instructor of the course and/or the French advisor reserve the right to determine the level of linguistic proficiency of the student and his or her admission to the class by means of an oral interview and/or placement exam scores. Note: This course assumes that students have passed FREN 2004 or 2120 or equivalent, or have taken four years of high school French, or possess equivalent proficiency. Term offered: fall term of even years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 3060 - Advanced French Language Skills**

Rigorous review of grammar (including subjunctive, interrogative, verbal phrase and passive voice), along with development of writing skills through analysis and discussion of selections from French writers. Through questions and written exercises, students familiarize themselves with vocabulary, spelling, and grammar. Note: May be taken before or after FREN 3050. Students with native or near-native level proficiency in French must consult with the French advisor before enrolling in this course. These students may, in some cases, take this course. The instructor of the course and/or the French advisor reserve the right to determine the level of linguistic proficiency of the student and his or her admission to the class by means of an oral interview and/or placement exam scores. Note: This course assumes that students have passed FREN 2004 or 2120 or equivalent, or have taken four years of high school French, or possess equivalent proficiency. Term offered: fall term of odd years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 3112 - Survey of French Literature I**

Introduces survey of the major literary trends and prominent writers of French literature from 842 A.D. to the end of the 18th century. Note: May be taken before or after FREN 3122. Note: This course assumes that students have passed FREN 2004 or 2120 or equivalent, or have taken four years of high school French, or possess equivalent proficiency. Term offered: fall term of odd years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 3122 - Survey of French Literature II**

Introduces survey of the major literary trends (romanticism, realism and existentialism) and writers of the 19th and 20th centuries. Students become acquainted with prominent writers of the period such as Beauvoir, Chateaubriand, Hugo, Balzac, Flaubert, Proust, Camus and Sartre. Note: May be taken before or after FREN 3112. Note: This course assumes that students have passed FREN 2004 or 2120 or equivalent, or have taken four years of high school French, or possess equivalent proficiency. Term offered: spring term of even years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 3130 - Current Topics of the French-Speaking World**

Combines discussion and writing on political, economic, and social conditions in contemporary France and the Francophone world. Articles from current French newspapers, news magazines, television broadcasts, and the World Wide Web are analyzed for a better understanding of modern French culture. Note: This course assumes that students have passed FREN 2004 or 2120 or equivalent, or have taken four years of high school French, or possess equivalent proficiency. Term offered: fall term of even years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 3140 - Contemporary Francophone Cultures**

Through the reading of short stories and cultural texts, engages students in the exploration of cultures of the Francophone world. Addresses political, economic and geographic status of each region as well as societal identity, immigration, the individual and cultural identity. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Note: This course assumes that students have passed FREN 2004 or 2120 or equivalent, or have taken four years of high school French, or possess equivalent proficiency. Term offered: spring term of odd years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 3200 - The Francophone World in the Post-Colonial Era**

Focuses on the many Francophone regions of the world, including (but not limited to) France, North and West Africa, Southeast Asia, and the Caribbean, and surveys a wide span of subject matter as it pertains to the post-colonial situations in these regions. Taught in English. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Prereq: Sophomore standing or higher. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 3939 - Internship**

Note: students must work with the Experiential Learning Center advising to complete a course contract and gain approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **FREN 3995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Term offered: summer. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 3 to 6

### **FREN 4200 - French Civilization Through the Nineteenth Century**

Development of French culture and civilization from a historical perspective, beginning with the origins of France and continuing through the 19th century. Includes historical background, sciences and techniques, daily life, the arts, literature and philosophy, and religion. Note: May be taken before or after FREN 4210. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Note: This course assumes that students have passed two 3000 level courses in French. Term offered: spring term of even years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 4210 - French Civilization - Twentieth and Twenty-First Centuries**

(Continuation of FREN 4200) The development of French culture and civilization in a historical perspective from the beginning of the 20th century to the present. Includes historical background, sciences and techniques, daily life, the arts, literature and philosophy, and religion. Note: May be taken before or after FREN 4200. Note: This course assumes that students have passed two 3000 level courses in French. Term offered: fall term of odd years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 4430 - Nineteenth Century French Novel**

Development of the French novel during the 19th century. Includes such writers as Stendhal, Hugo, Balzac, George Sand, Flaubert, Maupassant and Zola. Note: This course assumes that students have passed FREN 3112 or 3122 or an equivalent course, plus one other 3000 level course in French. Cross-listed with FREN 5430. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 4480 - Twentieth Century French Novel**

Represents novels of the 20th century, a period of great innovation in the French novel. Authors generally treated are Camus, Giono, Ernaux and Duras. Note: This course assumes that

students have passed FREN 3112 or 3122 or an equivalent course, plus one other 3000 level course in French. Cross-listed with FREN 5480. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 4510 - French Women Writers**

Designed to explore writings by French and Francophone women from the Middle Ages to the present. Addresses the question of what it means to be a woman and want to write. The selections include a wide variety of genres: autobiographical writings, stories, poems, manifestos, letters, political and historical documents. Note: This course assumes that students have passed FREN 3112 or 3122 or an equivalent course, plus one other 3000 level course in French. Cross-listed with FREN 5510 and WGST 4511/5511. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 4520 - Voices of Haiti and the Caribbean**

This course explores the literary production of contemporary Haitian and Caribbean writers within varied cultural and gender contexts. It focuses on historical, societal and post-quake issues confronting both men and women writers of the French Caribbean. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Note: This course assumes that students have passed FREN 3112 or 3122 or an equivalent course, plus one other 3000 level course in French. Cross-listed with FREN 5520. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 4840 - Independent Study: FREN**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **FREN 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **FREN 4995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Term offered: summer. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 1 to 15

### **FREN 5082 - Introduction to Translation**

Introduces the methodology and practice of written translation from English to French/French to English. Students will learn techniques on how to avoid word by word translation, faulty sentence structure and anglicisms by focusing on grammar, syntax and vocabulary. Note: Students must demonstrate third-year competence and advanced writing skills in English. Students with native or near-native level proficiency in French must consult with the French advisor before enrolling in this course. These students may, in some cases, take this course. The instructor of the course and/or the French advisor reserve the right to determine the level of linguistic proficiency of the student and his or her admission to the class by means of an oral interview and/or placement exam scores. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4082. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 5200 - French Civilization Through the Nineteenth Century**

Development of French culture and civilization from a historical perspective, beginning with the origins of France and continuing through the 19th century. Includes historical background, sciences and techniques, daily life, the arts, literature and philosophy, and religion. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Term offered: spring term of even years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 5210 - French Civilization - Twentieth and Twenty-First Centuries**

(Continuation of FREN 5200) The development of French culture and civilization in a historical perspective from the beginning of the 20th century to the present. Includes historical background, sciences and techniques, daily life, the arts, literature and philosophy, and religion. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Term offered: fall term of odd years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 5430 - Nineteenth Century French Novel**

Development of the French novel during the 19th century. Includes such writers as Stendhal, Hugo, Balzac, George Sand, Flaubert, Maupassant and Zola. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4430. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 5480 - Twentieth Century French Novel**

Represents novels of the 20th century, a period of great innovation in the French novel. Authors generally treated are Camus, Giono, Ernaux and Duras. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or



advanced-level proficiency. Cross-listed with FREN 4480. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 5510 - French Women Writers**

Designed to explore writings by French and Francophone women from the Middle Ages to the present. Addresses the question of what it means to be a woman and want to write. The selections include a wide variety of genres: autobiographical writings, stories, poems, manifestos, letters, political and historical documents. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4510 and WGST 4511/5511. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 5520 - Voices of Haiti and the Caribbean**

This course explores the literary production of contemporary Haitian and Caribbean writers within varied cultural and gender contexts. It focuses on historical, societal and post-quake issues confronting both men and women writers of the French Caribbean. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4520. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 5600 - History of the French Language**

Studies phonological, morphological, and syntactic changes in the language of Gaul from Latin to modern French. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4600. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 5690 - Methods of Teaching Modern Languages**

Studies the methods and practices of teaching modern languages. Note: requirement for those wishing to be teaching assistants in the Department of Modern Languages, and for language majors in the teacher certification program, School of Education, CU Denver. This course is taught in English and does not fulfill the foreign language proficiency requirement for the College of Liberal Arts and Sciences. Cross-listed with MLNG 4690, MLNG 5690, SPAN 4690, SPAN 5690, FREN 4690, GRMN 4690, GRMN 5690, CHIN 4690, CHIN 5690. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 5691 - Methods of Teaching Modern Languages II**

A continuation of the study of modern language teaching methods. This second course has an emphasis on experiential learning through individual teaching demonstrations, class observations, as well as team teaching with experienced instructors. Cross-listed with MLNG

4691, MLNG 5691, SPAN 4691, SPAN 5691, FREN 4691, GRMN 4691, GRMN 5691, CHIN 4691, CHIN 5691. Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **FREN 5840 - Independent Study: FREN**

Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **FREN 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **FREN 5995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Term offered: summer. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 1 to 15

## **Geography**

### **GEOG 1102 - World Regions Global Context**

Analyzes world regions and their global interconnectedness, including the dynamic and complex relationships between people and the world they inhabit. Demographic and cultural (political, economic, and historic) issues are examined as well as interactions between human societies and natural environments. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS2. **Semester Hours:** 3 to 3

### **GEOG 1111 - First Year Seminar**

Restriction: Restricted to Freshman level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 1202 - Introduction to Physical Geography**

The science that studies the processes, forms, and spatial or geographic structures of natural systems operating at or near the earth's surface, including weather, climate, and landform processes. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by

the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC2. **Semester Hours:** 3 to 3

### **GEOG 1302 - Introduction to Human Geography**

Systematic introduction to basic concepts and approaches in human geographic analysis. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 1602 - Urban Studies and Planning**

Surveys the process of urbanization, emphasizing the development of American cities, using Denver as an example. Topics covered include: evolution of metropolitan form/land use patterns, cultural landscape formation, city planning and architectural design, and urban social and policy issues. Note: This course is a prerequisite for GEOG 4680 Urban Sustainability: Perspectives and Practice AND GEOG 4640 Urban Geography Denver and the US. Term offered: fall, spring. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS2. **Semester Hours:** 3 to 3

### **GEOG 2080 - Introduction to Mapping and Map Analysis**

Studies major elements in the preparation of thematic maps, including sources of data collection and manipulation of data, and cartographic techniques for display of data. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 2202 - Hazards to Disasters: Perception and Management**

Surveys those physical phenomena that often cause substantial damage when they occur in areas of human settlement. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS2. **Semester Hours:** 3 to 3

### **GEOG 3100 - Geography of Colorado**

An analysis of the physical environment, history of settlement, and resource base of Colorado in relation to present economic patterns of the state. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 3110 - Geography of North America**

Systematic study of the physical, cultural, economic, and political relationships that shape the landscape of the United States, Canada, Greenland, and the U.S.-Mexico Borderlands. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 3120 - Geography of Europe**

An analysis of the physical environment, resource utilization, economic development and cooperation in Europe. A cultural and political geography which focuses on continuity and change in Eastern and Western Europe. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 3130 - Central America and the Caribbean**

Surveys the physical environment and cultural development of Central America and the Caribbean Islands. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 3140 - Geography of South America**

The physical environment, cultural development, and political instability within the area are analyzed. Influence of the landscape and climate, as well as Iberian cultural and land tenure patterns on historic settlement and modern growth are discussed. Problems associated with population, economics, politics, education, and geography are emphasized. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 3150 - Middle East**

Physical, cultural, and economic approach to the arid lands of the Middle East, including Arab land of the Sahara. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 3160 - Geography of China**

Geographic survey of the physical, cultural, and economic features characterizing the geography of China. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 3232 - Weather and Climate**

Introduces the processes and systems that govern both day-to-day weather and longer-term climate variations. Covers instrumentation and weather forecasting techniques. Prerequisite: GEOG 1202 or ENVS 1042 or (ENVS 1044 and ENVS 1045). Cross-listed with ENVS 3232. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 3240 - Colorado Climates**

Provides a broad overview of the various weather and climate patterns that are found within the state of Colorado. To accomplish this, the state of Colorado will be divided into regions which (hopefully) have a large degree of homogeneity in terms of weather and climate controls.

Note: Taught in a seminar style with students giving presentations and reports on their findings about a given region. Note: this course assumes that students have completed GEOG 1202 and/or GEOG 3232. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 3401 - Geography of Food and Agriculture**

An overview of food systems and agriculture as they impact an increasingly urbanized planet. We will survey historical food production and preservation, food justice and insecurity, land-use and preservation, as well as local and global systems of distribution and consumption. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 3412 - Globalization and Regional Development**

Addresses global political-restructuring and its implications for regional development in the U.S. Both historical and contemporary processes of globalization are examined. Topics include: the environmental basis of American industrial growth, the relationship between technological change and geographical shifts, the rise and decline of Fordism, the transfer of Japanese manufacturing methods to the U.S., the role of regional and national industrial policy, and the social consequences of globalization for labor and communities. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Students will not earn credit for GEOG 3412 if they have already earned credit for GEOG 3411. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 3430 - Geography of Tourism**

Geographic analysis of trends in recreation, travel, and tourism, and their economic, social, and environmental impacts. Examines growth and change in resorts and tourist destination areas. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Note: this course assumes that students have completed GEOG 1302 or GEOG 3411. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 3440 - Ecotourism**

The geographic study of a growing segment in contemporary tourism aimed at the provision of low impact travel to fragile, pristine and usually protected areas with the purpose of directly benefitting local communities and ecological conservation. The course surveys leading destination areas for ecotourism worldwide. GEOG 1302, GEOG 3411 or GEOG 3430 recommended. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 3450 - Cultural Heritage and Tourism**

The course involves the geographic study of tourism to heritage sites and their management. It is a growing segment in domestic and international travel, and market trends for different types

of destinations in heritage tourism are examined in a local, regional and national context. The course discusses heritage planning practices and processes as well as investigates dissonant heritage and dark tourism sites. Prereq: GEOG 1302 or GEOG 3411 or GEOG 3430 with a C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 3501 - Geography of Health**

Offers a critical geographic perspective to human health issues, examining disease distributions, how changing relationships between people and their environments (natural, built, and social environments) influence health, and different approaches to the study of health in geography. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 3770 - Geography and Film**

Geographic analysis of past and current film production and distribution systems and the complex relationships between film making and place in feature, documentary and educational film. Note: this course assumes that students have completed GEOG 1302 or GEOG 3411. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 3840 - Independent Study: GEOG**

Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **GEOG 3939 - Internship**

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Note: students must work with the Experiential Learning Center advising to complete a course contract and gain approval. Prereq: Junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **GEOG 3990 - Special Topics**

Investigation of current topics in geography such as analysis of issues (crime, public transportation), techniques (socioeconomic impact analysis), or areas of specialization (climatology). Note: specific necessary prior coursework varies with each topic; students are expected to have completed at least six hours in relevant social or physical science coursework. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **GEOG 4000 - Planning Methods**

This course focuses on the most commonly applied quantitative and qualitative methods used in planning; data organization and management principles; and various ways to collect, analyze, and communicate data as a fundamental component of the planning process. Prereq: This

course is intended for senior level students with a minimum cumulative gpa of 3.0. Crosslisted with URPL 5010. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4010 - Landscape Biogeochemistry**

A holistic approach to studying the role chemical elements play in synthesis/decomposition cycles, and the resultant environment from interaction of the lithosphere with the hydrosphere, atmosphere, biosphere, and pedosphere during geological, and ecological timeframes, together with anthropogenic activities. Prereq: Introductory college-level physical geography or environmental science course or permission of instructor. Prereq: GEOG 1202 or GEOL 1072 or permission from instructor. Cross-listed with GEOL 4010/ENVS 5010. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4020 - Earth Environments and Human Impacts**

Basic concepts describing earth's biomes and physical environment are presented in a systems context. Global warming assessment, from both political and scientific perspectives, is then presented. Model visualization of these concepts to consider human impacts on Earth's biomes is discussed. Earth system viewpoint, having links of Earth's biomes to oceans and atmosphere, completes the course discussion. Prereq: GEOG 1202 and GEOG 3232. Cross-listed with ENVS 5020, GEOL 4020. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4060 - Remote Sensing I: Introduction to Environmental Remote Sensing**

An in-depth treatment of the use of aerial photographs and other forms of imagery for the analysis of urban-industrial patterns, vegetation, agriculture, landforms, and geologic structure. Prereq: GEOG 2080 with a grade of C or better. Cross-listed with GEOG 5060. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4070 - Remote Sensing II: Advanced Remote Sensing**

Focuses on digital image processing of satellite and aerial images. Students explore the nature of digital image data, gain an understanding of image analysis using PCs, and learn about the use of analysis products in the development of GIS databases. Prereq: GEOG 4060/5060 with a grade of C or better, or permission of instructor. Cross-listed with GEOG 5070. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4080 - Introduction to GIS**

Introduces Geographic Information Systems (GIS), including justification, hardware/software, database design, and data conversion. GIS is a computer-based mapping system providing a graphical interface to locational and relational attribute data. Includes hands-on use of a GIS workstation. Prereq: GEOG 2080 with a grade of C or better. Cross-listed with GEOG 5080. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **GEOG 4081 - Cartography and Computer Mapping**

Provides an introduction to the art and science of cartography (map making). Students will learn about design principles, tools and techniques of map production, culminating in the creation of a high-quality map through hands-on exercises. Prereq: GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Cross-listed with GEOG 5081. Term offered: spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **GEOG 4085 - GIS Applications for the Urban Environment**

Takes a more detailed look at basic concepts presented in the introductory GIS course, concentrating on how GIS is used to solve real-world geographic problems. Various GIS applications within both the natural and social sciences are highlighted. The selection of specific topics is flexible, based on the interests of enrolled students. Prereq: GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better, or permission of instructor. Cross-listed with GEOG 5085. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **GEOG 4086 - FOSS4G Systems Integration**

Focuses on the integration of different FOSS4G (Free and Open Source Software for Geospatial Applications) software and technologies to create geospatial information systems that access data from different sources, storage structures, and formats to provide information to support decision making processes. Prereq: GEOG 4091 or 5091, and GEOG 4092 or 5092. Cross-listed with GEOG 5086. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **GEOG 4090 - Environmental Modeling with Geographic Information Systems**

Expands the basic knowledge of GIS to spatial models. Establishes a comprehensive framework that can be used to address a wide range of applications in natural and built environments. Prereq: GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better, or permission of instructor. Cross-listed with GEOG 5090. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **GEOG 4091 - Open Source Software for Geospatial Applications**

Students will master the individual use and integration of a stack of the most powerful Free and Open Source Software for Geospatial Applications (FOSS4G) to analyze spatial problems and create Spatial Data Infrastructures in different technological, socio-economic and organizational settings. Prereq: GEOG 4080 or 5080 or CVEN 5381 with a grade of C or better, or permission of the instructor. Cross-listed with GEOG 5091. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **GEOG 4092 - GIS Programming and Automation**



Students will learn the most commonly used programming language to automate GIS geoprocessing tasks and workflows in the latest versions of the most popular GIS systems. Cross-listed with GEOG 5092. Prereq: grade of B- or higher in GEOG 4080 or 5080 or similar course. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4095 - Deploying GIS Functionality on the Web**

Covers the core principles and technologies that allow the deployment of geographic information system (GIS) functionality over the World Wide Web. Hands-on exercises make use of the latest commercial software as well as open source technologies. Prereq: GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better, computer science background, or permission of instructor. Cross-listed with GEOG 5095. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4150 - Place, Landscape, and Meaning**

Investigates concepts that constitute place and landscape--how they are not just simply "there." Incorporates different schools of thought to help understand why landscapes are objects inseparable from us and open to multiple interpretations and meanings. Note: this course assumes that students have completed an introductory human geography course. Cross-listed with GEOG 5150. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4220 - Environmental Impact Assessment**

The objective of this course is to provide the foundation for understanding the environmental impact assessment process, its legal context, and the criteria and methods for procedural and substantive compliance. Cross-listed with GEOG 5220, URPL 6549. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4230 - Hazard Mitigation and Vulnerability Assessment**

Examines hazard mitigation and its planning and policy implications, emphasizing how vulnerability assessments play an integral role. Students explore how mitigation minimizes the impacts from hazards and use GIS to conduct a local study. Note: this course assumes that students have completed GEOG 2202. Cross-listed with GEOG 5230. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4235 - GIS Applications in the Health Sciences**

Examines how GIS is used throughout the health care industry and public health. Covers environmental health, disease surveillance, and health services research. Students critically review current literature and gain hands-on experience with GIS software. Note: this course assumes that students have completed GEOG 4080 or GEOG 5080 and/or have a background in

public health. Cross-listed with GEOG 5235, HBSC 7235. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4240 - Applied Geomorphology**

Uses hands-on tasks and field trips to investigate processes behind Earth's changing landforms in a variety of physical landscapes (aeolian, volcanic, coastal, fluvial, karst, glacial and periglacial) as related to rock decay, soils and climatic forcings. Prereq: GEOG 1202 or GEOL 1072 (required) and GEOG 3232 strongly recommended. Cross-listed with GEOL 4240, 5240 and GEOG 5240. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4251 - Fluvial Geomorphology**

Examines interactions between Earth's surface and flowing water across spatial and temporal scales. Considers structure and function of the major components of fluvial systems, with particular attention to the variety of fluvial systems to hydrologic, geologic and anthropogenic controls. Cross-listed with GEOG 5251, GEOL 4251 and GEOL 5251. Prereq: Students must have completed GEOG 1202 or GEOL 1072 or have graduate standing or gain instructor approval in order to register for this course. GEOG 3232 is strongly recommended, though not required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4260 - Energy and Natural Resource Planning**

This course provides an overview of the issues associated with energy and natural resource planning. Topics include: energy policy; alternative energy development; water resources; extraction/mining; natural resource protection and regulation; resource management, policies, politics, and technologies. Cross-listed with URPL 6510. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4265 - Sustainability in Resources Management**

Sustainability and sustainable development are the dominant economic, environmental and social issues of the 21st century. Follows a multi-disciplinary approach to these concepts. Case studies demonstrate their implementation in different geographical, ecological and socio-economic conditions worldwide. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Prereq: ENVS 1042 OR ENVS 1044 and ENVS 1045 with a C- or higher. Cross-listed with GEOG 5265. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **GEOG 4270 - Glacial Geomorphology**

Provides an in-depth view of the processes and systems found in glacial environments. Topics include: evidence of past glaciation; present-day glacial extent; glacier dynamics; glacial erosional processes and landforms; glacial depositional processes and landforms. Note: this

course assumes that students have completed GEOG 1202 or GEOL 1072. Cross-listed with GEOG/GEOL 4270/5270. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4280 - Environmental Hydrology**

Examination of hydrologic processes in relation to climate, soils, vegetation, land-use practices, and human interactions. Natural scientific perspectives emphasized; field and laboratory included. Prereq: GEOG 1202 AND one of: 1) GEOG 3232; 2) GEOG 4240/GEOL 4240/GEOG 5240; 3) GEOG 4010/GEOL 4010/ENVS 5000. Cross-listed with GEOL 4280 and ENVS 5280. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **GEOG 4300 - Children's Geographies**

This seminar is an interdisciplinary investigation of children, childhood and environment in the context of sustainability and equity. Theoretical and methodological perspectives are applied to understand children's interactions with/in different spaces. Cross-listed with GEOG 5300, ENVS 4300 and ENVS 5300. Restriction: Restricted to students with junior standing or higher or with instructor permission. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4301 - Population, Culture, and Resources**

Increasing world human populations are examined in the context of regional and global resources. Opposing viewpoints are studied, and students are required to complete a case study of a self-selected issue analyzing viewpoints associated with relevant opposing opinions. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Students may not receive credit for this course if they have already received credit for GEOG 3301. Cross-listed with GEOG 5301. Prereq: Junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4305 - Water Quality and Resources**

Introduces water resources aimed at students with little or no background in the field. This is a broad course covering topics ranging from the physical aspects of water to water politics and international law. While the course is largely a lecture format, discussion of current issues is a significant part of the class. Cross-listed with ENVS 5305. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4335 - Contemporary Environmental Issues**

Provides an overview of environmental challenges facing society today, focusing on how humans impact and change the environment. Opposing views and environmental policy at the local, state, national, and international levels are explored. Cross-listed with GEOG 5335. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4350 - Environment and Society in the American Past**

Overview of the geographical development of North American society from the late 15th century to the mid-20th century. A comparative regional approach emphasizing relationships between natural resource exploitation, cultural landscape formation and environmental change. Cross-listed with GEOG 5350. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4420 - The Politics of Nature**

Examines how economic systems, scientific discovery, institutional policies, and environmental knowledge converge to shape the environment and mediate the way societies understand, manage and respond to environmental changes in both the United States and the developing world. Cross-listed with GEOG 5420. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4440 - Science, Policy and the Environment**

Examines the social, economic and political forces shaping scientific discovery and the development and enforcement of environmental policy. Students will examine perspectives on issues such as risk, expertise, uncertainty and objectivity that influence the problem-defining, standard-setting and policy-making process. Cross-listed with GEOG 5440. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4450 - Urban Food and Agriculture: Perspectives and Research**

Provides an overview of research & practices in urban farming. Critically reviews emergent models of local food production/distribution. Compares new practices to traditional agribusiness. Assesses the prospects for solving sustainability problems within the modern agro-food system. Cross-list ENV5 5450. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4460 - Sustainable Urban Agriculture Field Study I**

Provides a field-based overview of urban farm planning & management. Topics: range/land conservation, native/invasive species, water distribution, animal husbandry, government interaction, local markets, community relations, conservation easements and issues pertaining to urban farming. Note: this course assumes that students have completed GEOG 4450. Cross-list ENV5 5460. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4470 - Sustainable Urban Agriculture Field Study II**

Provides a field-based overview of current practices in local agricultural production. Emphasis will be placed on sustainable practices and their most efficient situation, Special consideration will be given to plausible solutions for food insecure communities both local and global. Note: this course assumes that students have completed GEOG 4450 and 4460. Cross-list ENV5 5470. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4480 - Urban Vegetable CSA: Planning, Production&Distribution**

This course outlines the planning, production, and distribution in an active urban vegetable CSA (community supported agriculture) model. It is offered as a part of the GES Sustainable Urban Agriculture Certificate. Cross-listed with ENVS 5480. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4640 - Urban Geography: Denver and the U.S.**

Uses a combined lecture/seminar format to explore research themes in urban geography. Topics covered include both historical and contemporary processes of urban development and transformation. Particular emphasis is placed on the U.S. and Colorado's Front Range. Cross-listed with GEOG 5640. Prereq: GEOG 1602 with a grade of C- or higher or permission from instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4670 - Transportation Planning and Policy**

This course examines policy issues in urban transportation planning: how transportation system design and political/institutional contexts shape transportation decision-making; major modes of urban transportation; and the social, environmental, economic, energy, and health impacts of transportation systems. Cross-listed with URPL 6550. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4680 - Urban Sustainability: Perspectives and Practice**

Examines various perspectives on sustainability, including ambiguities and opportunities of sustainability as a conceptual framework. Class also examines what sustainability looks like in practice, using numerous topics such as poverty and urban farming to water and climate change. Cross-listed with GEOG 5680. Prereq: ENVS 1342 or GEOG 1602 with a grade of C- or higher or permission from instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4710 - Disasters, Climate Change, and Health**

Provides a review of the impacts of disasters and climate change on human health, using a broad framework of preparedness, mitigation, response, recovery, and adaptation. Note: this course assumes that students have completed GEOG 2202 or GEOG 3501. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4720 - Climate Change: Causes, Impacts and Solutions**

Examines science behind past, present & future climate change & environmental, social & political implications & solutions. Explores recent scientific research, syntheses & mainstream literature advancing knowledge about causes & consequences of natural & anthropogenic

climate change. Prereq: GEOG 3232. Cross-listed with GEOG 5720/ ENVS 4720/ ENVS 5720. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4731 - Mountain Biogeography**

This course utilizes the close proximity of the Rocky Mountains to examine altitudinal influences on species distributions. Topics include species patterns and distributions, disturbance, climate impacts, forest management and sustainability. Note: A three-day field trip within Colorado will occur the first weekend of the Fall semester, and is highly encouraged. Prereq: GEOG 1202 or ENVS 1042 or graduate standing or permission from the instructor is required in order to register for this course. Cross-listed with ENVS 5731. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **GEOG 4740 - Soil Science and Geography**

Reviews chemical and physical properties of soils, soil development, and geographic distributions of soil types in the context of the role that soils play in natural and human-altered ecosystems. Cross-listed with GEOG 5740, ENVS 4740, ENVS 5740. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4840 - Independent Study: GEOG**

Independent research primarily for undergraduate majors. Prereq: Permission of department. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **GEOG 4850 - Understanding And Communicating Field Methods**

Interdisciplinary course that presents a balanced overview of common field methods and how to communicate them effectively to a general audience. Includes hands-on experience with various field methods (e.g., transects, survey design, historical assessment, GIS, etc.) and communication strategies. Note: this course assumes that students have completed an introductory geography or environmental science course. Prereq: Junior standing or higher. Cross-listed with GEOG 5850 and ENVS 4850/5850. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **GEOG 4900 - Colloquium**

Engages students and faculty in discussion of current and pertinent world topics, including specific readings, (guest) presentations, and creation of working research papers, among other items. Students and faculty may work in research groups to accomplish specific goals. Prereq: Junior standing or higher. Cross-listed with ENVS 4900, ENVS 5900, GEOG 5900. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 1 to 1

### **GEOG 4940 - Senior Seminar**

Introduces students to the professional literature in the field. Various professionals and faculty lecture about geography/planning research and careers. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4950 - Honors Thesis**

A capstone course designed to promote critical thinking, research methodology, and writing/oral presentation skills. Students design and develop a research project under the supervision of a faculty advisor. Each student gives an oral presentation or defense of his or her thesis at the end of the semester in which they enroll. Note: this course assumes that students have completed GEOG 4940. Prereq: Junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 4990 - Special Topics**

Repeatable. Max hours: 9 Credits. **Semester Hours:** 1 to 6

### **GEOG 4992 - Advanced Regional Field Study**

Directed, hands-on study of concepts involved in understanding geographic regions. Utilizes field observations, field techniques/methods, & data observation, collection, analysis, & interpretation related to the specific region being studied. May include physical as well as cultural phenomena. Note: Instructor permission required. Cross-listed with GEOG 5992, ENVS 4992, ENVS 5992. Repeatable. Max Hours:12 Credits. **Semester Hours:** 1 to 6

### **GEOG 4995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Cross-listed with ENVS 4995, ENVS 5995, and GEOG 5995. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 9

### **GEOG 5050 - Applied Spatial Statistics**

Practice and application of spatial analytical and statistical methods using modern GIS and spatial statistical software. Topics include spatial data handling, interpolation, pattern analysis,

cluster detection, visualization, and modeling. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Note: an introductory course in statistics is strongly recommended for success in this course. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing**

An in-depth treatment of the use of aerial photographs and other forms of imagery for the analysis of urban-industrial patterns, vegetation, agriculture, landforms, and geologic structure. Cross-listed with GEOG 4060. Completion of GEOG 2080 with a C or better is recommended for optimal student success. Prereq: Graduate standing. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5070 - Remote Sensing II: Advanced Remote Sensing**

Focuses on digital image processing of satellite and aerial images. Students explore the nature of digital image data, gain an understanding of image analysis using PCs, and learn about the use of analysis products in the development of GIS databases. Prereq: Graduate standing and GEOG 4060/5060 or permission of instructor. Cross-listed with GEOG 4070. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5080 - Introduction to GIS**

Introduces Geographic Information Systems (GIS), including justification, hardware/software, database design, and data conversion. GIS is a computer-based mapping system providing a graphical interface to locational and relational attribute data. Includes hands-on use of a GIS workstation. Cross-listed with GEOG 4080. Prereq: Graduate standing. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5081 - Cartography and Computer Mapping**

Provides an introduction to the art and science of cartography (map making). Students will learn about design principles, tools and techniques of map production, culminating in the creation of a high-quality map through hands-on exercises. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Note: Completion of GEOG 2080 with a C or better is recommended for optimal student success. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5085 - GIS Applications for the Urban Environment**

Takes a more detailed look at basic concepts presented in the introductory GIS course, concentrating on how GIS is used to solve real-world geographic problems. Various GIS applications within both the natural and social sciences are highlighted. The selection of specific topics is flexible, based on the interests of enrolled students. Prereq: Graduate standing and



GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Cross-listed with GEOG 4085. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5086 - FOSS4G Systems Integration**

Focuses on the integration of different FOSS4G (Free and Open Source Software for Geospatial Applications) software and technologies to create geospatial information systems that access data from different sources, storage structures, and formats to provide information to support decision making processes. Prereq: GEOG 4091 or 5091, and GEOG 4092 or 5092. Cross-listed with GEOG 4086. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5090 - Environmental Modeling with Geographic Information Systems**

Expands the basic knowledge of GIS to spatial models. Establishes a comprehensive framework that can be used to address a wide range of applications in natural and built environments. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Cross-listed with GEOG 4090. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5091 - Open Source Software for Geospatial Applications**

Students will master the individual use and integration of a stack of the most powerful Free and Open Source Software for Geospatial Applications (FOSS4G) to analyze spatial problems and create Spatial Data Infrastructures in different technological, socio-economic and organizational settings. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Cross-listed with GEOG 4091. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5092 - GIS Programming and Automation**

Students will learn the most commonly used programming language to automate GIS geoprocessing tasks and workflows in the latest versions of the most popular GIS systems. Cross-listed with GEOG 4092. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5095 - Deploying GIS Functionality on the Web**

Covers the core principles and technologies that allow the deployment of geographic information system (GIS) functionality over the World Wide Web. Hands-on exercises make use of the latest commercial software as well as open source technologies. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Cross-listed with GEOG 4095. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5150 - Place, Landscape, and Meaning**

Investigates concepts that constitute place and landscape--how they are not just simply "there". Incorporates different schools of thought to help understand why landscapes are objects inseparable from us and open to multiple interpretations and meanings. Note: this course assumes that students have completed an introductory human geography course. Prereq: Graduate standing. Cross-listed with GEOG 4150. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **GEOG 5220 - Environmental Impact Assessment**

The objective of this course is to provide the foundation for understanding the environmental impact assessment process, its legal context, and the criteria and methods for procedural and substantive compliance. Cross-listed with GEOG 4220, URPL 6549. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **GEOG 5230 - Hazard Mitigation and Vulnerability Assessment**

Examines hazard mitigation and its planning and policy implications, emphasizing how vulnerability assessments play an integral role. Students explore how mitigation minimizes the impacts from hazards and use GIS to conduct a local study. Note: this course assumes that students have completed GEOG 2202 or equivalent. Prereq: Graduate standing. Cross-listed with GEOG 4230. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **GEOG 5235 - GIS Applications in the Health Sciences**

Examines how GIS is used throughout the health care industry and public health. Covers environmental health, disease surveillance, and health services research. Students critically review current literature and gain hands-on experience with GIS software. Note: this course assumes that students have completed GEOG 4080 or GEOG 5080 and/or have a background in public health. Cross-listed with GEOG 4235, HBSC 7235. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **GEOG 5240 - Applied Geomorphology**

Uses hands-on tasks and field trips to investigate processes behind Earth's changing landforms in a variety of physical landscapes(aeolian, volcanic, coastal, fluvial, karst, glacial and periglacial) as related to rock decay, soils and climatic forcings. Note: this course assumes that students have completed GEOG 1202 or GEOL 1072 and GEOG 3232. Prereq: Graduate standing. Cross-listed with GEOL 4240, 5240 and GEOG 4240. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **GEOG 5251 - Fluvial Geomorphology**

Examines interactions between Earth's surface and flowing water across spatial and temporal scales. Considers structure and function of the major components of fluvial systems, with particular attention to the variety of fluvial systems to hydrologic, geologic and anthropogenic

controls. Cross-listed with GEOG 4251, GEOL 4251 and GEOL 5251. Restricted to Graduate and Graduate Non-Degree students. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5265 - Sustainability in Resources Management**

Sustainability and sustainable development are the dominant economic, environmental and social issues of the 21st century. Follows a multi-disciplinary approach to these concepts. Case studies demonstrate their implementation in different geographical, ecological and socio-economic conditions worldwide. Note: this course assumes that students have completed ENVS 1042 or equivalent. Prereq: Graduate standing. Cross-listed with GEOG 4265. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **GEOG 5270 - Glacial Geomorphology**

Provides an in-depth view of the processes and systems found in glacial environments. Topics include: evidence of past glaciation; present-day glacial extent; glacier dynamics; glacial erosional processes and landforms; glacial depositional processes and landforms. Note: this course assumes that students have completed GEOG 1202 or GEOL 1072 or equivalent. Prereq: Graduate standing. Cross-listed with GEOG/GEOL 4270/5270. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5300 - Children's Geographies**

This seminar is an interdisciplinary investigation of children, childhood and environment in the context of sustainability and equity. Theoretical and methodological perspectives are applied to understand children's interactions with/in different spaces. Cross-listed with GEOG 4300, ENVS 4300 and ENVS 5300. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5301 - Population, Culture, and Resources**

Increasing world human populations are examined in the context of regional and global resources. Opposing viewpoints are studied, and students are required to complete a case study of a self-selected issue analyzing viewpoints associated with relevant opposing opinions. Note: Students may not receive credit for this course if they have already received credit for GEOG 3301. Cross-listed with GEOG 4301. Restriction: Restricted to graduate students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5335 - Contemporary Environmental Issues**

Provides an overview of environmental challenges facing society today, focusing on how humans impact and change the environment. Opposing views and environmental policy at the local, state, national, and international levels are explored. Cross-listed with GEOG 4335. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5350 - Environment and Society in the American Past**

Overview of the geographical development of North American society from the late 15th century to the mid-20th century. A comparative regional approach emphasizing relationships between natural resource exploitation, cultural landscape formation and environmental change. Cross-listed with GEOG 4350. Prereq: Graduate standing. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **GEOG 5420 - The Politics of Nature**

"Examines how economic systems, scientific discovery, institutional policies, and environmental knowledge converge to shape the environment and mediate the way societies understand, manage and respond to environmental changes in both the United States and the developing world. Cross-listed with GEOG 4420. Prereq: Graduate standing. Max hours: 3 Credits."

**Semester Hours:** 3 to 3

### **GEOG 5440 - Science, Policy and the Environment**

Examines the social, economic and political forces shaping scientific discovery and the development and enforcement of environmental policy. Students will examine perspectives on issues such as risk, expertise, uncertainty and objectivity that influence the problem-defining, standard-setting and policy-making process. Cross-listed with GEOG 4440. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5640 - Urban Geography: Denver and the U.S.**

Uses a combined lecture/seminar format to explore research themes in urban geography. Topics covered include both historical and contemporary processes of urban development and transformation. Particular emphasis is placed on the U.S. and Colorado's Front Range. Cross-listed with GEOG 4640. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5680 - Urban Sustainability: Perspectives and Practice**

Examines various perspectives on sustainability, including ambiguities and opportunities of sustainability as a conceptual framework. Class also examines what sustainability looks like in practice, using numerous topics such as poverty and urban farming to water and climate change. Cross-listed with GEOG 4680. Prereq: Graduate standing. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **GEOG 5710 - Disasters, Climate Change, and Health**

Provides a review of the impacts of disasters and climate change on human health, using a broad framework of preparedness, mitigation, response, recovery, and adaptation. Note: this

course assumes that students have completed GEOG 2202 or GEOG 3501. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5720 - Climate Change: Causes, Impacts and Solutions**

Examines science behind past, present & future climate change & environmental, social & political implications & solutions. Explores recent scientific research, syntheses & mainstream literature advancing knowledge about causes & consequences of natural & anthropogenic climate change. Cross-listed with GEOG 4720/ ENVS 4720/ ENVS 5720. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5740 - Soil Science and Geography**

Reviews chemical and physical properties of soils, soil development, and geographic distributions of soil types in the context of the role that soils play in natural and human-altered ecosystems. Prereq: graduate standing or permission of instructor. Cross-listed with GEOG 4740, ENVS 4740, ENVS 5740. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5840 - Independent Study**

Section 1, economic; 2, physical; 3, urban; 4, social; 5, quantitative; 6, transportation. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **GEOG 5850 - Understanding And Communicating Field Methods**

Interdisciplinary course that presents a balanced overview of common field methods and how to communicate them effectively to a general audience. Includes hands-on experience with various field methods (e.g., transects, survey design, historical assessment, GIS, etc.) and communication strategies. Note: this course assumes that students have completed an introductory geography or environmental science course. Prereq: Graduate standing. Cross-listed with GEOG 4850 and ENVS 4850/5850. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **GEOG 5900 - Colloquium**

Engages students and faculty in discussion of current and pertinent world topics, including specific readings, (guest) presentations, and creation of working research papers, among other items. Students and faculty may work in research groups to accomplish specific goals. Prereq:

Graduate standing. Cross-listed with ENVS 4900, ENVS 5900, GEOG 4900. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 1 to 1

### **GEOG 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **GEOG 5990 - Special Topics In Geography**

Course content varies from semester to semester, depending on faculty member teaching the course. Prereq: Graduate standing. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 6

### **GEOG 5992 - Advanced Regional Field Study**

Directed, hands-on study of concepts involved in understanding geographic regions. Utilizes field observations, field techniques/methods, & data observation, collection, analysis, & interpretation related to the specific region being studied. May include physical as well as cultural phenomena. Note: Instructor permission required. Cross-listed with GEOG 4992, ENVS 4992, ENVS 5992. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

### **GEOG 5995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ENVS 4995, ENVS 5995, and GEOG 4995. Max hours: 12 Credits. **Semester Hours:** 3 to 9

### **GEOG 6300 - Foundations Seminar in Human-Environmental Interaction**

This seminar allows students to gain a deeper appreciation for historical and contemporary geographical approaches to understanding the relationship between society and the environment through a survey review of seminal concepts, theories and debates that have shaped the discipline. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 6700 - Integrated Methods**

Geographers employ a variety of quantitative and qualitative methods in their research. The course presents these methods as a continuum, rather than separate typologies, and reviews the difference between integrated and mixed methods. Students will evaluate how and when

to apply various methods to most appropriately elicit data. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 6750 - Research Design**

Reviews research framework common to all geographers. Reviews the key steps in designing and executing high-caliber independent research, including topic selection, literature review and data collection analysis. Students will develop competence in applying relevant theories from the natural and social sciences through projects. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 6800 - Community-Based Research Practicum**

For students to apply the concepts and skills presented throughout the masters program in a community setting. Students will participate in a real-world, studio-based project that meets the needs of a government, non-governmental, or private sector organization and will produce a scoped product. Prerequisite: GEOG 6300 with a C or higher. Cross-list ENV5 6800. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOG 6840 - Independent Study: GEOG**

Independent research for graduate major students. Prereq: Permission of department. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **GEOG 6950 - Master's Thesis**

Prereq: Graduate standing. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 6

### **GEOG 8990 - Doctor's Thesis**

Prereq: Graduate standing. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

## **Geology**

### **GEOL 1073 - Physical Geology: Surface Processes**

This survey course develops a basic understanding of surface processes and landforms in geology. It includes one all-day field trip. Students must also take the accompanying laboratory GEOL 1074. No co-credit with GEOL 1072. Prereq or Co-req: GEOL 1074. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOL 1074 - Physical Geology: Surface Processes Laboratory**

Introduces the basic scientific approach through investigations, observations, and experiments in surface processes and landforms in geology. Students must also take the accompanying lecture GEOL 1073. Prereq or Co-req: GEOL 1073. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **GEOL 1083 - Physical Geology: Internal Processes**

This survey course develops a basic understanding of physical geology emphasizing the earth's interior, covering internal processes and properties, with plate tectonics as the underlying theme, Includes one all-day field trip. Students must also take the accompanying laboratory GEOL 1084. No co-credit with GEOL 1082. Prereq or co-req: GEOL 1084. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOL 1084 - Physical Geology: Internal Processes Laboratory**

Introduces the basic scientific approach through investigations, observations, and experiments in internal geologic processes and properties of the earth's interior with plate tectonics as the underlying theme. Prereq or co-req: GEOL 1083. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **GEOL 4010 - Landscape Biogeochemistry**

A holistic approach to studying the role chemical elements play in synthesis/decomposition cycles, and the resultant environment from interaction of the lithosphere with the hydrosphere, atmosphere, biosphere, and pedosphere during geological, and ecological timeframes, together with anthropogenic activities. Prereq: GEOG 1202 or GEOL 1072 or permission of instructor. Cross-listed with GEOG 4010/ENVS 5010. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOL 4020 - Earth Environments and Human Impacts**

Basic concepts describing earth's biomes and physical environment are presented in a systems context. Global warming assessment, from both political and scientific perspectives, is then presented. Model visualization of these concepts to consider human impacts on Earth's biomes is discussed. Earth system viewpoint, having links of Earth's biomes to oceans and atmosphere, completes the course discussion. Cross-listed with ENVS 5020, GEOG 4020. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOL 4030 - Environmental Geology**

Applies geological information to interactions between people and the physical environment. Increasing awareness of its importance in our society means that this is an expanding field as companies are required to address the environmental consequences of their actions. Prereq: Senior standing. Cross-listed with ENVS 5030 and GEOL 5030. Max hours: 3 Credits. **Semester Hours:** 3 to 3



## **GEOL 4270 - Glacial Geomorphology**

Provides an in-depth view of the processes and systems found in glacial environments. Topics include: evidence of past glaciation; present-day glacial extent; glacier dynamics; glacial erosional processes and landforms; glacial depositional processes and landforms. Prereq: GEOG 1202 or GEOL 1072. Cross-listed with GEOG/GEOL 4270/5270. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **GEOL 4780 - Engineering Geology**

Studies geology as utilized in engineering and environmental practice. Emphasizes a conceptual integration of geologic materials, processes, and rates of change as a basis for successful application of geologic knowledge to environmental planning and engineering design projects. Prereq: MATH 2411 and CVEN 2121. Cross-listed with GEOL 5780 and CVEN 4780. Max hours: 4 Credits. **Semester Hours:** 4 to 4

## **GEOL 4840 - Independent Study: GEOL**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

## **GEOL 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 6

## **GEOL 4995 - Travel Study**

Fieldwork- and research-based experience studying a diverse selection of geologic settings worldwide. Students individually research geologic areas of interest in an assigned region, followed by on-location field investigations and measurements of geologic data and phenomena. Note: Topics vary depending on region under study, student interest, and faculty specialty. Prereq: GEOL 1072 and GEOL 1082. Cross-listed with GEOL 5995. Max hours: 12 Credits. **Semester Hours:** 3 to 9 **Semester Hours:** 3 to 9

## **GEOL 5001 - RM-MSMSP: Earth Processes I**

Systematic study of geological concepts, rock and mineral formation, plate tectonics, volcanism and earthquakes, landforms and weathering, historical environmental interpretation. Includes a field component. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: students should obtain permission of project director prior to enrolling in this course. Prereq: Graduate standing. Max hours: 4 Credits. **Semester Hours:** 4 to 4

## **GEOL 5002 - RM-MSMSP: Earth Sciences II - Sedimentology and Paleontology**

Field and lecture course building on Earth Sciences I, which covers internal earth processes. Students learn about erosional processes and how sedimentary rocks are deposited and may be preserved; the different ways fossils are preserved; describing rocks in the field; and collecting, preparing and describing fossils. Provides an overview of the geology of the area so that students can place the detailed studies in context. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: GEOL 5001. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **GEOL 5003 - RM-MSMSP: Earth Science in Context**

Designed for teachers in the RM-MSMSP program. Topics include global climate change, glaciers, coastal geology, volcanism, and their effects on culture. Monuments such as Florissant Fossil Beds, Ice Core, Cave of the Winds and a quarry will be visited. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: Graduate standing. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **GEOL 5004 - RM-MSMSP Research Experience for Teachers - Geology Cohort**

A five-week research exploration in which RM-MSMSP teachers will raise their level of relevant scientific understanding by engaging in a "hands-on" workshop, transforming what they have learned into new curricular materials that will improve the scientific abilities of their students and hopefully stimulate them to consider a STEM career. Note: credit may not apply toward any CLAS degree. Prereq: Graduate standing. Max hours: 6 Credits. **Semester Hours:** 1 to 6

### **GEOL 5030 - Environmental Geology**

Applies geological information to interactions between people and the physical environment. Increasing awareness of its importance in our society means that this is an expanding field as companies are required to address the environmental consequences of their actions. Note: students should be enrolled in the MSES program to take this course. All other students should consult with the instructor and obtain their permission prior to registering for this course. Prereq: Graduate standing. Cross-listed with GEOL 4030 and ENVS 5030. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOL 5111 - Field Methods in Geology**

Introduction to the basic methods of geologic mapping (metamorphic, sedimentary, and igneous rocks), including use of the Brunton compass and Jacob Staff, as well as preparation of measured stratigraphic sections, geologic maps, and geologic cross-sections. Note: this course assumes that students have completed GEOL 1072 or GEOG 1202. GEOL 3421 is strongly recommended. Prereq: Graduate standing. Cross-listed with GEOL 4111. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOL 5240 - Applied Geomorphology**

Uses hands-on tasks and field trips to investigate processes behind Earth's changing landforms in a variety of physical landscapes (aeolian, volcanic, coastal, fluvial, karst, glacial and periglacial) as related to rock decay, soils and climatic forcings. Note: this course assumes that students have completed GEOG 1202 or GEOL 1072 and GEOG 3232. Prereq: Graduate standing. Cross-listed with GEOG 4240, 5240 and GEOL 4240. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOL 5251 - Fluvial Geomorphology**

Examines interactions between Earth's surface and flowing water across spatial and temporal scales. Considers structure and function of the major components of fluvial systems, with particular attention to the variety of fluvial systems to hydrologic, geologic and anthropogenic controls. Cross-listed with GEOG 4251, GEOG 5251 and GEOL 4251. Restriction: Restricted to Graduate and Graduate Non-Degree students. GEOG 3232 is strongly recommended, though not required. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOL 5270 - Glacial Geomorphology**

Provides an in-depth view of the processes and systems found in glacial environments. Topics include: evidence of past glaciation; present-day glacial extent; glacier dynamics; glacial erosional processes and landforms; glacial depositional processes and landforms. Note: this course assumes that students have completed GEOG 1202 or GEOL 1072. Prereq: Graduate standing. Cross-listed with GEOG/GEOL 4270/5270. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEOL 5780 - Engineering Geology**

Studies geology as utilized in engineering and environmental practice. Emphasizes a conceptual integration of geologic materials, processes, and rates of change as a basis for successful application of geologic knowledge to environmental planning and engineering design projects. Note: this course assumes that students have completed MATH 2411 and CVEN 2121. Prereq: Graduate standing. Cross-listed with GEOL 4780 and CVEN 5780. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **GEOL 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **GEOL 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes,

to the Graduate School for approval. Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **GEOL 5950 - Master's Thesis**

Prereq: Graduate standing. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

### **GEOL 5995 - Travel Study**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Prereq: Graduate standing. Cross-listed with GEOL 4995. Repeatable. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 9

### **GEOL 6840 - Independent Study: GEOL**

Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **GEOL 6950 - Master's Thesis**

Prereq: Graduate standing. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

### **GEOL 6960 - Master's Project**

Prereq: Graduate standing. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

## **German**

### **GRMN 1010 - Beginning German I**

Introduces basic grammar, sentence structure and speech patterns. Note: Students may not enroll in any lower division (1000/2000) language skills course in which their level of proficiency exceeds that of the course. Students placing into a course through any means other than following the regular sequence must consult with an appropriate faculty member of the Dept. of Modern Languages prior to enrollment. Term offered: fall. Max hours: 5 Credits. **Semester Hours:** 5 to 5

### **GRMN 1020 - Beginning German II**

(Continuation of GRMN 1010.) Note: Students may not enroll in any lower division (1000/2000) language skills course in which their level of proficiency exceeds that of the course. Students placing into a course through any means other than following the regular sequence must consult with an appropriate faculty member of the Dept. of Modern Languages prior to enrollment. Note: This course assumes that students have passed GRMN 1010 or equivalent, or

have taken one year of high school German, or possess equivalent proficiency. A grade of C- or higher in GRMN 1010 is recommended for success in this course. This course is not intended for native speakers. Term offered: spring. Max hours: 5 Credits. **Semester Hours:** 5 to 5

### **GRMN 3200 - Current German Society and Culture**

Provides students with a detailed overview of the systems in modern, united Germany such as social, educational, and political. Examines how Germany sees itself as a vital member of the EU. Exposes students to rudimentary use of the German language. Prereq: Sophomore standing. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GRMN 4690 - Methods of Teaching Modern Languages**

Studies the methods and practices of teaching modern languages. Note: requirement for language majors in the teacher certification program, School of Education, CU Denver. This course is taught in English and does not fulfill the foreign language proficiency requirement for the College of Liberal Arts and Sciences. Cross-listed with MLNG 4690, MLNG 5690, SPAN 4690, SPAN 5690, FREN 4690, FREN 5690, GRMN 5690, CHIN 4690, CHIN 5690. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GRMN 5690 - Methods of Teaching Modern Languages**

Studies the methods and practices of teaching modern languages. Note: requirement for those wishing to be teaching assistants in the Department of Modern Languages, and for language majors in the teacher certification program, School of Education, CU Denver. This course is taught in English and does not fulfill the foreign language proficiency requirement for the College of Liberal Arts and Sciences. Cross-listed with MLNG 4690, MLNG 5690, SPAN 4690, SPAN 5690, FREN 4690, FREN 5690, GRMN 4690, CHIN 4690, CHIN 5690. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GRMN 5691 - Methods of Teaching Modern Languages II**

A continuation of the study of modern language teaching methods. This second course has an emphasis on experiential learning through individual teaching demonstrations, class observations, as well as team teaching with experienced instructors. Cross-listed with MLNG 4691, MLNG 5691, SPAN 4691, SPAN 5691, FREN 4691, FREN 5691, GRMN 4691, CHIN 4691, CHIN 5691. Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GRMN 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **GRMN 5995 - Travel Study**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Repeatable. Max hours:15 Credits. **Semester Hours:** 1 to 15

## **Global Energy Management**

### **GEMM 6000 - 21st Century Global Energy Issues and Realities**

Introduction to the global energy industry's past, present and future. Current and historical issues in regions such as: Atlantic Basin, former Soviet Union, east of Suez, North and South America will be covered. World production centers and markets are discussed to include relevant energy security, scenario planning, risk management and regulation, deregulation, and environmental concerns. Note: Students will learn the geographic distribution of energy resources worldwide including governmental systems. Repeatable. Max Hours: 6 Credits.

**Semester Hours:** 3 to 3

### **GEMM 6100 - Global Energy Economics**

Course includes energy geo-economics with and introduction to managerial tools of the trade. Topics will include world energy markets-demand and supply; refining and marketing, energy forecasts, oil and gas transportation, and National Oil Companies vs. International Oil Companies. An introduction to environmental economics will also help students connect the energy industry to sustainable work practices. In addition students will learn the geographic distribution of energy resources worldwide along with the political and government systems associated with those resources. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEMM 6200 - Environmental, Regulatory, Legal & Political Environment in the Energy Industry**

Exploration of current political situations regarding the energy industry, its environmental impact in the short and long term. Topics include climate change, pollution, solid wastes and conversions to natural resources. Students will become familiar with national and international energy laws and regulations, financial arrangements, confidentiality, and bidding agreements. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEMM 6210 - Energy and the Law: Property and Contracts**

The elective will focus on the process of managing the use and development of land resources in a sustainable way. Topics such as; public controls, powers used for land regulation, and an intro to real estate will be covered to enhance students understanding of land management and its application to the energy industry. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **GEMM 6220 - Interacting With Foreign Governments And State Enterprises**

Globalization of many energy companies, dwindling U.S. energy sources, and growing overseas energy demand have increased the need for energy professionals to gain expertise in doing business with foreign governments and state enterprises, which play a much greater role in the ownership and operation of energy extraction and energy delivery in virtually all countries beyond the United States and Canada. This course reviews negotiation strategies in the context of uncertain contract enforcement, volatility and uncertainty of prices and restrictions, and highly contentious political contexts. It also reviews the approaches for interacting effectively with state enterprises that are often undercapitalized and inefficient, and examines how valuation of energy assets can take into account political risk, and requirements to provide infrastructure and social services. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **GEMM 6230 - Political Risk Management for Global Energy Environmen**

The course examines public influence on energy business activities. Students will explore the economics of political action and methods for evaluating how stakeholder groups interact to influence political outcomes. They will use these tools to develop strategies for stakeholder engagement and to manage business risks. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **GEMM 6300 - Technical Aspects of Energy Science**

This course will familiarize students with the newest renewable and alternative energy sources. The course does not focus on hydrocarbon sources but examines challenges and opportunities that exist for the establishment of the new energy sources to become viable in the industry. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **GEMM 6400 - Leadership and Decision Making in the Global Energy Environment**

Students will examine leadership from an energy executive perspective. Topics include: how execs lead, change, innovation, interacting with top management teams, the board, leadership issues involved with governance of the firm, strategies for enhancing executive influence and ethics and responsibilities associated with exec. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **GEMM 6410 - People Management in the Global Energy Environment**

Explains that people are energy's most important asset. Students will learn the latest research in human resource theories, study models, and learn how to develop organizational effectiveness from the firm's human capital. Concepts on: effective teamwork, attracting and retaining talent and using HR processes such as performance management and development to drive engagement will be discussed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **GEMM 6430 - Organizational Behavior in the Energy Industry**

Students will learn how to lead and manage human assets inside energy industries. Students will be exposed to fundamental principles of human behavior and increase their competence of working in diverse settings. Proper management can lead to a sustainable competitive advantage, because of management of employees and developing them into enthusiasts of your firm. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEMM 6450 - Strategic Management of the Energy Industry**

The course focuses on how to improve an organization's competitiveness in a changing global environment. Emphasis on sustainable strategies, students develop skills to formulate, implement and evaluate organizational strategies in the rapidly changing environment. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEMM 6460 - Integrated Information Management for Energy Firms**

This course covers issues associated with developing an integrated information managing strategy to identify major information categories used with an energy firm. It covers relationships to business processes to guide applications development and facilitate the integration and sharing of data. Using case studies from energy firms operational, administrative and strategic systems will be discussed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEMM 6470 - Energy Marketing and Communications**

This course covers the challenges faced by energy industries in developing branding, and developing new markets. Marketing both products and the company to its stakeholders, in the face of competitive pressures, students learn practical marketing tools and how they can be used to effect corporate strategy. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEMM 6500 - Energy Accounting in the Global Markets**

The course builds a basic understanding of how to convey to decision makers, in and out of the firm, information about its resources. Emphasis on; analysis of income statements, balance sheet, statement and cash flows (historical financial accounting information) with specific coverage of cost-volume-profit, variance, forecasting, joint interest accounting and measurement of divisional performance. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEMM 6600 - Introduction To Financial Management In The Energy Industry**

Introduction to fundamental principal of asset valuation and financing in competitive global markets. Providing the tools necessary to analyze day-to-day financial issues in the energy industry (time value of money, valuation of income streams, risk weighted investment returns.) Topics such as: risk management, arbitrage, hedging and foreign exchange will be covered. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3



### **GEMM 6610 - Advanced Financial Management in the Energy Industry**

This course is focused on understanding the costs and benefits of various forms of capital. By examining internal and external managers, students will be able to assess alternative capital sources to achieve their strategic objectives. The course will introduce effective investor communication techniques. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEMM 6620 - Energy Asset & Production Management for the Energy Industry**

The course covers management of an organization's energy resources and facilities as well as broader coverage of project management. Portfolio strategy, planning, scope, time, cost, quality and organizational effectiveness will be addressed. Also when budget, material, vendor relations or other factors disrupt a project, students will be prepared on how to react. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **GEMM 6630 - Commercialization Management of Renewable Energies**

This course will focus on the business aspects running a renewable energy entity either as a separate company or sector within an established company. Students taking this course have completed a previous course on the basic science of renewable energy. This course is intended to focus on leadership issues and decision making regarding renewable energy. As a significant part of the course, students will learn how to review information and data supplied to them by engineers, accountants, finance, marketing, scientists, and other stakeholders within and outside their company including federal, state, and local governments and regulatory agencies to make sound business decisions. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GEMM 6690 - Special Topics**

This elective course is intended to be a variable-credit course specially designed to provide national and international learning opportunities. The course will offer concentrated problem-solving experiences within the energy industry through travel to industry-significant cities and regions, while meeting and visiting with people working and dealing with issues in the industry. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **GEMM 6840 - Independent Study**

Allow students to gain additional experience in a particular realm of energy business that interest them and suit their ultimate career goals. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **Greek**

#### **GREK 1020 - Greek II: Biblical**

A continuation of 1st-semester Biblical and Classical Greek. Covers the remaining forms and syntax of the textbook, with an emphasis on sight-reading passages from the New Testament. At the end of the course we will read, translate and study short fragments and lines written by some Pre-Socratic philosophers such as Thales, Anaxagoras, Anaximander, Heraclitus, and Parmenides. Prereq: GREK 1010. Max hours: 5 Credits. **Semester Hours:** 5 to 5

### **GREK 2110 - Greek III: Classical**

Introduction to classical Greek, followed by reading of Plato's "Apology" with selections from "Pre-Socratic philosophers" (e.g. Xenophanes of Colophon, Zeno of Elea, Pythagoras) and Aristotle. Prereq: GREK 1020. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **GREK 5840 - Independent Study - GREK**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Repeatable. Max Hours: 12 Credits.

**Semester Hours:** 1 to 3

### **Health Administration**

#### **HLTH 5939 - Internship**

**Semester Hours:** 1 to 3

#### **HLTH 6010 - Health Care Systems**

Introduces the structure and function of the medical care delivery system. Includes basic concepts and measures of health, disease, quality, values, needs and utilization; issues in health care manpower, institutions and system organization; general issues in policy, reimbursement and regulation; broad community, and organizational considerations in medical care organizations. The student is introduced to the principles of epidemiology and environmental health and demonstrates the application of epidemiology concepts to planning for the healthcare service needs of a population. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **HLTH 6070 - International Health Policy and Management**

A framework for understanding national health reform policy and management issues in the U.S. and other nations, including industrialized, developing, and transforming nations. This course combines classroom and on-line teaching. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **HLTH 6071 - Introduction To Health Information Technology**

Examines what needs transforming in healthcare to improve value, safety, and appropriateness of care, and what the role of IT is in that transformation. IT also examines the challenges of cultural change and IT strategy in succeeding with clinical information projects. Differences between installation, implementation, transition and actual transformation are suggested, and methods for managing subcultures in healthcare (IT, clinical, administrative) are reviewed. Cross-listed with ISMG 6071. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HLTH 6072 - Management of Healthcare Information Technology**

Provides an introduction to the management of information technology in healthcare. A description of information processing, the origin, content, evolution of healthcare information systems, and the methodologies deployed to acquire and manage information requirements are discussed. Cross-listed with ISMG 6072. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HLTH 6075 - International Health Travel Study**

Experiential course, which is designed to open students up to innovative health delivery practices in an international location. Students learn how health issues such as reproductive health, infectious diseases, mental health, health and economy, and chronic diseases are handled in community and public health settings. Class trips are usually 14-18 days to an Asian country during the month of January. Prereq: HLTH 6010 or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HLTH 6730 - Healthcare Operations Management**

Students in this course will obtain a comprehensive and practical examination of operations management with an emphasis on application to health care organizations. Students will use mathematical and basic spreadsheet skills to critically assess patient flows, volume projection, and supply chain management to improve the efficiency of service delivery in health care organizations. Detailed content on reducing cycle times (e.g., patient wait times), measuring productivity, streamlining process flows, tracking outcomes, staffing, and performance metrics will be presented in the course. Prereq/Coreq: BUSN 6630; Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Instructor's approval may be obtained if the Prereq or Co-Reg has not been met. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HLTH 6740 - Profiles in Health Care**

This colloquium provides a rare opportunity for students to interact with top CEOs from health care organizations around the country. Students learn about HMOs, hospitals, medical group practices, consulting, managing careers, how to get jobs, and how to be successful in a job. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HLTH 6770 - Healthcare Quality and Outcomes**

Studies the identification, measurement and improvement of healthcare quality. Covers, historic and contemporary views of quality, improvement theories and methods, organizational quality systems, leadership, patient safety, cost and quality, quality measurement and reporting, clinical outcomes, care redesign and medical terminology. Restriction: Restricted to HLAD and MBAH majors within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HLTH 6800 - Special Topics**

Offered irregularly. Current interests in the health management field. Topics recently offered include: international health, ethics, general systems theory, and key issues for health systems. Consult the current 'Schedule Planner' for semester offerings. Prerequisites vary according to topics and instructor requirements. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HLTH 6840 - Independent Study: HLTH**

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 8

### **HLTH 6911 - Health Field Studies**

The objective of this course is to expose students to health care organizations with which they are not familiar. Each student is assigned to a health care organization and given a specific problem or project to complete. Prereq: HLTH 6010 or permission of instructor. After registration, please contact Errol.Biggs@ucdenver.edu for further instructions. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Health & Behavioral Sciences**

### **HBSC 5999 - Topics in the Health and Behavioral Sciences**

An in-depth study of selected social science perspectives/theories and their applications to population health. Topics will vary from semester to semester, with a particular emphasis on current, salient population health problems. Prereq: Graduate standing or permission of instructor. Cross-listed with PBHL 4999. Max hours: 9 Credits. **Semester Hours:** 1 to 3

### **HBSC 6320 - Human Genetics: Legal, Ethical and Social Issues**

Examines legal, ethical, and social issues that have come about with advances in human genetics. Topics include privacy, informed consent, discrimination, forensics, medical malpractice, and property rights. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HBSC 7320, ANTH 6041. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HBSC 6500 - Women and War**

Appraise women's experiences and selected issues related to war-time service, including women's roles during war, gender-specific policies, military sexual trauma, reintegration, and effects of deployment on mental and physical health. Restriction: Restricted to Graduate and Graduate Non-Degree major. Term offered: summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HBSC 6840 - Independent Study: HBSC**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

## **HBSC 7001 - Colloquium Series in the Health and Behavioral Sciences**

Features presentations by core, affiliated and adjunct faculty; alumni; distinguished guest speakers; and students nearing completion of the dissertation. The goal is to expose students to cutting-edge applications of health-related social and biological science research and to introduce students to the research interests of core and affiliated HBS faculty, advanced students, and alumni who they might otherwise not have the opportunity to meet. Note: Required for ALL first and second year students but open to all graduate students and faculty. May be taken up to three times for credit. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 1

## **HBSC 7011 - Theoretical Perspectives**

Covers the following subject areas: philosophy and epistemology of the social and behavioral sciences as they are applied in public health and health care contexts; historical perspectives of Western biomedicine and public health; crosscultural perspectives on health systems; class, ethnic, and gender correlates of health and sickness; critical perspectives on Western health and health care models; and the structure and organization of health care systems. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HBSC 7021 - Theory in Health and Behavioral Sciences**

Covers theories utilized in development and assessment of public health programs with goals to improve health. Students acquire skills in theory building and testing and how to best utilize theory to address pressing health concerns. Prereq: HBSC 7011. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HBSC 7031 - Human Ecology and Environmental Adaptation**

Focuses on the interplay of biology, environment, culture, and behavior in the causes and exacerbation of disease. The course includes the following topics: health in environmental and evolutionary contexts; models of causation in biomedicine and other medical systems; individual, community, and population manifestations of health and disease; and biocultural interaction in disease process. Specific case studies drawn from contemporary health problems are used to illustrate in detail the nature of these processes. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HBSC 7041 - Research Design and Methods in the Health and Behavioral Sciences I**

This course has four principal aims: (1) to provide students a working knowledge of research methodology as applied to field research efforts; (2) to enable students to apply research methodologies to areas of particular interest in the health and behavioral sciences; (3) to expose students to data manipulation techniques common to social science quantitative research; and (4) to teach basic research proposal development techniques. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HBSC 7051 - Qualitative Research Design and Methods**

Much of the data collected in the social sciences is interview- and text-based. This course explores methods for collecting and analyzing these data and theoretical paradigms that underlie these methods. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HBSC 7061 - Quantitative Methods in the Health and Behavioral Sciences**

This course introduces students to multivariate regression methods - a set of statistical models that relate an outcome variable to a set of predictor variables. The course emphasizes understanding and applying regression models to address social science research questions. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **HBSC 7071 - Social and Behavioral Determinants of Health and Disease**

Surveys the distribution, determinants, and psychological and behavioral aspects of health and disease. Social, economic, environmental, and cultural variations in and determinants of health, disease, and quality of life, as well as barriers to access and utilization, geopolitical influences, environmental and social injustice, historical trends, and future directions are addressed.

Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HBSC 7111 - Applications of the Health and Behavioral Sciences**

The purpose of this course is to help students select and refine a dissertation research topic. Each student, through presentations and discussions of their work, will receive feedback from fellow students and the instructor, and will have an opportunity to improve written and oral presentation skills. Prereq: Admission to the Health and Behavioral Sciences program and HBSC 7041 with a B- or higher or permission of the instructor. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HBSC 7120 - Human Reproductive Technologies and the Law**

Examines the legal, ethical, and social issues that have come about with advances in assisted reproductive technologies (ART). Illustrates how lawyers, judges, bioethicists, legislators, and policy makers have addressed these issues. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HBSC 7121 - Dissertation Proposal and Research**

Restriction: Restricted to Graduate Level Students admitted into the Health and Behavioral Sciences program. Repeatable. Max hours: 8 Credits. **Semester Hours:** 6 to 8

### **HBSC 7161 - Quantitative Methods in Health&Behavioral Sciences II**

This course introduces students to advanced multivariate regression methods (e.g., generalized linear models, survival models, hierarchical models). This course emphasizes the application of advanced regression methods to test social and behavioral science theories related to health. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HBSC 7210 - Human Health and Environmental Pollution**

Examines the roles of technology and society in the etiology and control/prevention of adverse health outcomes associated with releases of toxic substances. Examples come from experience and the literature on occupational cancer and reproductive hazards, occupational and environmental regulation of hazardous wastes, air, and water pollution. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ENVS 6210. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HBSC 7235 - GIS Applications in the Health Sciences**

Examines how GIS is used throughout the health care industry and public health. Covers environmental health, disease surveillance, and health services research. Students critically review current literature and gain hands-on experience with GIS software. Prereq: GEOG 4080 or GEOG 5080, public health background, or consent of instructor. Cross-listed with GEOG 4235, GEOG 5235. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HBSC 7310 - Environmental Epidemiology**

Provides a basic understanding of the methods used to study the effects on human health of exposures to physical, chemical, or biological factors in the external environment. The course explains the use of epidemiologic methods through a problem solving approach to investigating environmental health case studies. Restriction: Restricted to Graduate and Graduate Non-Degree majors. A basic statistics class is strongly recommended for optimal success. Cross-listed with ENVS 6230. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HBSC 7320 - Human Genetics: Legal, Ethical and Social Issues**

Examines legal, ethical, and social issues that have come about with advances in human genetics. Topics include privacy, informed consent, discrimination, forensics, medical malpractice, and property rights. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HBSC 6320, ANTH 6041. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HBSC 7340 - Risk Assessment**

The process of determining the likelihood and extent of harm that may result from an activity or event. Topics covered are: hazard identification, dose-response evaluation, exposure assessment, and risk characterization. The subjects of risk management, risk perception, and risk communication are also discussed. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with CVEN 5494, ENVS 6200. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HBSC 7360 - Toxicology**

Introduces the field of toxicology. Emphasizes the mechanisms by which chemicals produce toxic effects and the methods for assessing toxicity. Note: Designed for students in the environmental sciences and occupational health fields. Restriction: Restricted to Graduate and Graduate Non-Degree majors. One year of college chemistry and one year of college biology are strongly recommended for optimal success. Cross-listed with ENVS 6220. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HBSC 7400 - Topics in the Health and Behavioral Sciences**



A flexible seminar format for dealing with topics of special interest in the health and behavioral sciences. Topics to be considered vary from semester to semester. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **HBSC 8990 - Doctoral Dissertation**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Admission to the Health and Behavioral Sciences program. Term offered: fall, spring, summer. Repeatable. Max hours: 30 Credits. **Semester Hours:** 1 to 10

### **Health Humanities**

#### **HEHM 3100 - Introduction to Health Humanities**

This course introduces students to the rich field of medical humanities. It examines how various disciplines analyze relationships among culture, society and medicine, and what humanistic approaches can teach us about biomedical theory and health care training and practice. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **HEHM 3570 - Death & Dying: Social & Medical Perspectives**

Focusing on death, dying and bereavement using medical and social perspectives, this course explores how illness, prolonged dying and sudden death impact care providers, families and communities. Discussion, film, readings and music address the connection of social and medical issues. Cross-listed with SOCY 3570. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **HEHM 4840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Prereq: Permission of instructor. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

#### **HEHM 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## Historic Preservation

### HIPR 6010 - Preservation Theory and Practice

The practice of historic preservation has evolved in a specific policy context. This introductory course introduces basic American institutions and laws associated with preservation as well as standards, definitions, and practices associated with these. Cross-listed with URPL 6499. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### HIPR 6090 - Special Topics in Historic Preservation

Various topics in historic preservation, according to current faculty and student interests. Prereq: HIPR 6010 or permission of instructor. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### HIPR 6110 - Regionalisms & the Vernacular

This class explores the history of the built environment from the perspective of evolutionary change; peoples attempting to meet utilitarian needs, respond to environmental forces, societal expectations, and aesthetic aspirations through design. The course looks closely at vernacular structures in a global context. Prereq: HIPR 6010 or permission of instructor. Cross-listed with ARCH 6350. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### HIPR 6170 - Preservation Design Studio

Preservation Design Studio provides a project-based learning experience for Historic Preservation students; who are typically integrated into a pre-approved studio of one of the College of Architecture & Planning's departments. Topics vary according to faculty interests. Cross-listed: Varies by semester. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 6 to 6

### HIPR 6210 - Historic Buildings in Context

This course covers the concept of "historic significance" and develops skills in understanding and professionally utilizing this concept. Procedures and skills are introduced. Prereq: HIPR 6010 or permission of instructor. Cross-listed with ARCH 6233. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### HIPR 6220 - Adaptive Reuse: Business and Practice

Existing buildings and infrastructure afford challenges and opportunities for reuse. This course explores the business, and financial aspects of adapting the built environment for contemporary uses. The course is suitable for designers, planners, historians and social scientists. Restriction: Restricted to majors within the College of Architecture and Planning. Cross-listed with ARCH 6356. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIPR 6310 - Documentation, Analysis, Representation**

This methods course focuses on skills development in in-situ documentation of the historic environment. The course includes modules on: a) historic records, b) archaeological evidence, c) building and site measurement, d) photographic & photometric methods, e) geo-spatial data, f) graphic representation, and g) reporting formats. Prereq: HIPR 6010 or permission of instructor. Cross-listed with ARCH 6352. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIPR 6410 - Urban Conservation: Context for Reuse**

This course begins with the premise that human habitats, and especially cities, are dynamic and ever changing; and that the preservationist cannot (and should not try) to freeze cities in a static representation of the past. The course deals with both the philosophical and political contexts, but emphasizes the role of strategic design intervention in the shaping of evolving cities. This includes traditional preservation activities, but also recognizes the importance of progressive change. Readings are diverse, but at least two case study cities are used to ground the concepts. Class activities include: a) research, b) field study, c) design, and d) presentation. Prereq: HIPR 6010 is recommended. Cross-listed with ARCH 6355. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

## **HIPR 6510 - Building Conservation**

This course emphasizes the relationship between knowledge acquisition, professional judgement, and design modification. Topics include: 1) Historic Building Types & Methods, 2) Field and Lab Methods of Building Assessment, and 3) Management of Building Rehabilitation. The course takes an integrative approach to the scientific, aesthetic, managerial and legal dimensions of preservation. Prereq: HIPR 6010 or permission of instructor. Cross-listed with ARCH 6351. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIPR 6610 - Reading the City**

Design and planning professionals, including preservationists, must learn to work in environments with which they have had little previous knowledge. This course emphasizes gaining understanding of a novel environment and translating that knowledge into a well researched and media savvy professional presentation. Students prepare a research plan, then conduct research on a relatively unfamiliar urban environment, such as Chicago (or other major city), returning to prepare, present, and critically reflect upon their applied research through a media-savvy final project. Prereq: HIPR 6410 is recommended. Cross-listed with ARCH 6232. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIPR 6840 - Independent Study**

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to historic preservation. Prereq: Permission of instructor. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **HIPR 6851 - Professional Project**

The Professional Project is one of two options for completing the Capstone Requirement. There are multiple ways of satisfying this requirement, but the agreed upon Project must show critically reviewed evidence of professional competence in the field of historic preservation. Prereq: Permission of instructor. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **HIPR 6930 - Internship**

Designed to provide professional practice experience. The internship is composed of eight to twelve hours per week working in a professional preservation setting during the regular semester. Prereq: Permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIPR 6951 - Thesis**

Thesis is one of two options for completing the Capstone Requirement. Students may choose to develop a specialized thesis in some topic related to historic preservation. Prereq: LDAR 6949. Max hours: 6 Credits. **Semester Hours:** 6 to 6

## **History**

### **HIST 1026 - World History Since 1500**

Surveys the interactions of the world's civilizations in modern times. The emphasis is on understanding the concept of modernization within a global context. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 1361 - U.S. History to 1876**

Provides an introduction to the major forces, events and individuals that shaped the historical development of American society, beginning with the European settlement of America and concluding with the Civil War, reconstruction and the early growth of an industrial order. Term offered: fall, spring. Max Hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-HI1. **Semester Hours:** 3 to 3

### **HIST 1362 - U.S. History Since 1876**

Provides an introduction to the major forces, events, and individuals that shaped the historical development of American society from the Civil War to the present. Term offered: fall, spring,

summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-HI1. **Semester Hours:** 3 to 3

### **HIST 1381 - Paths to Present**

Examines several topics of profound interest to historians world wide: nature and technology, secular and religious faiths, and concepts of political union. The experience of the U.S. as it relates to the experiences of other periods and cultures. Term offered: fall, spring. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-HI1. **Semester Hours:** 3 to 3

### **HIST 1400 - Controversies in History**

Examines a variety of cases where historians have significant disagreement or diverse interpretations regarding "what happened" and "why," to come to an understanding of what historians do and how they do it. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 2001 - The Uses and Misuses of History**

This course examines the uses and misuses of historical interpretation in the public sphere, focusing on how history has been employed over time to persuade or influence public debates. Term offered: spring, fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 3031 - Theory and Practice of History: An Introduction to the Major**

Introduces history majors to the discipline at the outset of their course work. Covers historiographical trends and methodologies, and familiarizes students with the various types of research and writing they are likely to encounter in their classes. Note: This course should be taken as early as possible, and must be taken before HIST 4839. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 3121 - The World at War, 1914-1945**

Examines World Wars I and II as episodes in a protracted conflict among the nations of the capitalist West, the emerging states of Asia and the colonial world, and the USSR. Studies the causes and consequences of the wars. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 3231 - Famous U.S. Trials**

This introduction to the history of the U.S. trial court system will contextualize significant trials in historic and cultural moments. The course will explore the roles of legal communication and

mass communication in contemporary and subsequent representations of the trial. Cross-list COMM 3231. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 3260 - Digital Studies and Strategies**

This interdisciplinary course emphasizes developing media production, web, and GIS skills to design individual and group media projects based on students' research. Critiques and readings examine the successful confluence of media and historical content along with digital dissemination strategies. Cross-listed with HIST 5260. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 3343 - Women & Gender in US History**

This course will explore women and gender as drivers of US history. From politics to popular culture, jobs to sexual empowerment, civil rights to economic restructuring, we will use gender as a lens to re-envision familiar stories about American history. Cross-listed with WGST 3343, WGST 5343, and HIST 5343. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 3345 - Immigration and Ethnicity in American History**

Explores the personal and collective experience of immigrants to America. Discusses problems of assimilation, urban and rural experiences, and implications for politics, the economy and social attitudes. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 3349 - Social Movements in 20th Century America**

By surveying the major American social movements of the twentieth century, this course will explore how Americans have created categories of race, ethnicity, culture, and sexuality and how elite and marginalized citizens have deployed these categories in politics. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 3396 - History of the American Indian**

Indigenous nations in North America comprise hundreds of diverse cultures. This course examines U.S. Indian policy and how indigenous nations responded; how they creatively adapted, and resisted cultural change; and how they continue to persist culturally, socially, and politically. Cross-listed with ETST 3396. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 3470 - Intro to East Asia: Since 1800**

This course introduces the history of China, Japan and Korea from 1800 to the present, focusing on political, economic and social changes. It is designed for lower division undergraduates with

no background in Asian history. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 3480 - Introduction to European History**

This course examines the major events and influences that have shaped modern Europe, including monarchies, the Enlightenment, the Industrial Revolution, the rise of political ideologies, the French and Russian Revolutions, capitalism, imperialism, and two World Wars in the twentieth century. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Term offered: spring, summer, fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 3482 - Rome: City and Empire**

Pagan Rome from its earliest beginnings to the rise of Christianity. Emphasis is on the military, socio-economic, and political history of Rome, its empire in Italy, and its domination of the Mediterranean World (ca. 800 B.C. to A.D. 300). Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 3487 - Medieval Europe**

Surveys the general history of Europe from the fall of Rome to the opening of modern Europe. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 3500 - African History in Novels and Films**

Introduces modern Africa through the eyes of creative artists. Various topics, such as childhood, religion, and colonialism, are presented from various points of view--African and non-African. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 3601 - Colorado History**

Presents the story of the people, society, and culture of Colorado from the earliest Native Americans, through the Spanish influx, the fur traders and mountain men, the gold rush, railroad builders, the cattlemen and farmers, the silver boom, the tourists, and the modern twentieth-century state. Term offered: spring, fall, summer. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 3939 - Internship**

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: Students must have 15 hours of HIST courses completed with

2.75 GPA and must work with Experiential Learning Center advising to complete a course contract and gain approval. Term offered: spring, summer, fall. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **HIST 4032 - Globalization in World History Since 1945**

An interdisciplinary course on contemporary world history and globalization. While the course is historically structured, economic, political, and sociological matters are explored. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Cross-listed with HIST 5032. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 4074 - Post-War Germany**

Historical survey of Germany since the second world war, with an emphasis on culture and society. Cross-listed with HIST 5074. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 4133 - Management of Material Culture and Museum Collections**

This course provides in-depth knowledge of the rudiments of material culture documentation, preservation and management. While we have designed this class for those interested in working in history museums, this is also appropriate for those students who want to learn the place of artifacts in studying history. Cross-listed with HIST 5133. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 4209 - Race, Religion, and Belonging**

Race/ethnicity and religion are conconstitutive social and cultural formations that have played a fundamental part in determining the boundaries of belonging of the United States. In this course, students will interrogate when, why and how race/ethnicity and religion have been used to delineate borders, determine citizenship, navigate legal classifications, dictate social mobility, and regulate economic possibilities. We will analyze both primary sources ?such as sermons, reality TV shows, court cases and graphic images as well as scholarly writing to explore how formations of race and religion have shaped notions of belonging in the US nation?state, thereby constructing the boundaries of the state itself. Cross-listed with ETST 4030, ETST 5030, RLST 4030, RLST 5030 and HIST 5209. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 4212 - Civil War and Reconstruction**

Begins with the causes and outbreak of the American Civil War, describes the military conflict and the social aspects of the war, examines the federal efforts to reconstruct the southern



states, and protect the rights of Black citizens after 1865. Cross-listed with HIST 5212. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 4227 - American West**

Introduces the diverse peoples, places, and approaches to the development of the trans-Missouri West from prehistoric times to the present. Cross-listed with HIST 5227. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 4229 - Colorado Historic Places**

Introduces community architecture, folklore, and history for all students. Students learn how to survey, describe, and designate significant historical structures and districts. Cross-listed with HIST 5229. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 4240 - National Parks History**

Introduces how the National Park Service uses history to identify, designate, preserve, and interpret America's most outstanding historic and natural history sites. After tours of NPS sites, students select from a wide range of projects. Note: Open to all students. Cross-listed with HIST 5240. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 4244 - Interpretation of History in Museums: Exhibits and Education**

This course allows students to gain in-depth knowledge of historical interpretation through exhibits and education in a museum setting. This class is designed for those preparing to work in history museums but is also appropriate for teachers and others who want to learn how museum programs interpret history with artifacts and other historical materials. Cross-listed with HIST 5244. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 4308 - Crime, Policing, and Justice in American History**

Focuses on changing legal and cultural definitions of crime, the role of the police, the evolution of punishment in theory and practice, and the role of mass culture in shaping the social history of crime and justice. Cross-listed with HIST 5308. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 4412 - Mexico and the United States: People and Politics on the Border**

Examines the convoluted relations between these two republics, focusing on diplomatic, cultural, and social interactions. Cross-listed with HIST 5412. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 4421 - Modern China**

Surveys Chinese history in the modern era. Includes examination of Western domination of China; revolution and internal fragmentation of China; Japanese attacks and World War II; and civil war and the communist revolution. Cross-listed with HIST 5421. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 4455 - African Struggle for Independence**

An assessment of African leadership from the colonial era to the present. Cross-listed with HIST 5455. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 4461 - The Modern Middle East**

Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Cross-listed with HIST 5461. Term offered: fall. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

### **HIST 4462 - Islam in Modern History**

This course studies Islamic thought and practice over the last two centuries in terms of major historical processes that have operated at local, national, and global scales. Cross-listed with HIST 5462, RLST 4462, RLST 5462. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 4475 - The Vietnam War**

Covers the conflict in Vietnam, with roots in the period prior to World War II. Main topics include the rise of nationalism in French Indochina, the war against the French, the Northern move to unify Vietnam, American intervention, and eventual victory of the Northern regime. Cross-listed with HIST 5475. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 4490 - Weapons of Mass Destruction**

Weapons of mass destruction have affected politics, health, and environments around the globe. This course will examine the development, use, and consequences of these modern technologies of war and terror. Cross-listed with HIST 5490. Term offered: summer, fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 4494 - Red and Blue America: U.S. History, 1973-Present**

Surveys the major intersections of politics, culture, and society in American history since 1973. The course will be attentive to the diversity of American experiences and will explore both domestic and international themes in United States history. Cross-listed with HIST 5494. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIST 4810 - Special Topics**

Cross-listed with HIST 5810. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

## **HIST 4839 - History Seminar**

Covers the use of documentary sources and historical criticism, with students utilizing these skills in a historical research paper. Note: Required for history majors. Preferably taken in the senior year. Prereq: HIST 3031 with a grade of C or higher. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIST 4850 - History in the Community: History Day Mentoring**

Directed by CU Denver History faculty, students participate in and judge National History Day in Colorado. They gain teaching experience mentoring students preparing social-studies and literacy-based projects. Their papers are based on scholarly readings and analyses of their experiences in middle and high schools. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Prereq: Permission of department chair. Term offered: spring. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

## **HIST 5027 - Enlightenment and Revolution**

In this course students explore the relationship of ideas and events in Europe during the 17th and 18th centuries. Modernizing trends in the European economy, religion, science, states and international affairs leading up to the French Revolution. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with HIST 4027. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIST 5028 - Nations and Classes: 19th Century Europe**

Focuses on material and ideological changes in 19th century Europe, exploring social, cultural, political, economic, and intellectual developments. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4028. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIST 5029 - Age of Anxiety in Europe**

Looks at Europe at the end of the nineteenth century in an effort to determine if there is any relation between the peculiarities in culture at the time and the horrors in politics that followed. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4029. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIST 5030 - Europe During the World Wars**

Covers the history of the two world wars and their origins, political and social upheaval during the interwar economic crisis, the rise of communism, Italian fascism and Nazism, with an emphasis on cultural production and intellectual life. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4030. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIST 5031 - Contemporary Europe**

History of Europe since 1945. Students study the economic, social, and political history of Europe since World War II, with a special emphasis on the Cold War and intellectual currents. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4031. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIST 5032 - Globalization in World History Since 1945**

An interdisciplinary course on contemporary world history and globalization. While the course is historically structured, economic, political, and sociological matters are explored. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4032. Term offered: fall, spring, summer. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIST 5035 - Crisis and Transformation: Europe's 20th Century**

This course examines 20th century European history focusing on themes of crisis and transformation. We will explore how devastating wars, economic depression, stark ideological divisions, and revolutionary social, political and cultural movements dramatically changed Europe over the course of the century. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4035. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIST 5046 - Victorians and Victorianism**

Taking an interdisciplinary perspective, this course examines English people and English life during the reign of Queen Victoria, 1837-1901. What were the defining features of the Victorian age? What did it mean to be "Victorian?" When and why did the Victorian paradigm break down? Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4046. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIST 5051 - Britain and The Empire**

Examines 19th and 20th century British history, addressing social, cultural, and political themes. Explores industrialization, state growth, and imperialism; relationships between race, gender, and class; and the ways in which colonizers and the colonized experienced empire. Restriction:

Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4051. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5055 - The Atlantic Slave Trade: Africa, Caribbean and U.S.**

Presents a broad overview of the slave trade in the Atlantic World, including discussion of the slave plantation, the creation of Caribbean societies and the consequences of independence from Britain. Restriction: Restricted to Graduate Level students. Cross-listed with HIST 4055. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5062 - Modern France: 1789 to the Present**

Considers the shaping of modern France from the 18th century Bourbon Monarchy and aristocratic society to today's liberal democracy, in which multiculturalism, globalization and supranational institutions call into question the very nature of French identity. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4062. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5071 - Modern Germany**

Surveys the major political, institutional, social, economic, and cultural developments that have occurred in Germany since the late 18th century. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HIST 4071. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5074 - Post-War Germany**

Historical survey of Germany since the second world war, with an emphasis on culture and society. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4074. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5075 - Travel Stories and Origins of Cultural Anthropology**

Examines the early history of cultural anthropology by means of classic travel literature. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4075. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5076 - History of Modern Science**

Surveys the history of science from the 18th century to the present. Treats all disciplines, from physics to physiology, in an attempt to understand how the natural world came to dominate our sense of ourselves. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4076. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5083 - Russia Since 1917**

Studies the development of the Soviet Union from its formation in the October Revolution, through the Civil War, the new economic policy, industrialization, collectivism, the Stalinist purges, up to the present. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4083. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5133 - Management of Material Culture and Museum Collections**

This course provides in-depth knowledge of the rudiments of material culture documentation, preservation and management. While we have designed this class for those interested in working in history museums, this is also appropriate for those students who want to learn the place of artifacts in studying history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4133. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5201 - Core Themes in U.S. History**

This course surveys major themes in U.S. history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4201. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5209 - Race, Religion, and Belonging**

Race/ethnicity and religion are conconstitutive social and cultural formations that have played a fundamental part in determining the boundaries of belonging of the United States. In this course, students will interrogate when, why and how race/ethnicity and religion have been used to delineate borders, determine citizenship, navigate legal classifications, dictate social mobility, and regulate economic possibilities. We will analyze both primary sources ?such as sermons, reality TV shows, court cases and graphic images as well as scholarly writing to explore how formations of race and religion have shaped notions of belonging in the US nation?state, thereby constructing the boundaries of the state itself. Cross-listed with ETST 4030, ETST 5030, RLST 4030, RLST 5030 and HIST 4209. Restriction: Graduate standing or instructor permission required to enroll. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5210 - The American Revolution**

The crisis of the British Empire in North America from the end of the French and Indian War to the ratification of the American Constitution. Topics include the emerging economy, constitutional arguments against Britain, the conduct of the war, and the definition of a republic. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4210. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5212 - Civil War and Reconstruction**

Begins with the causes and outbreak of the American Civil War, describes the military conflict and the social aspects of the war, and examines the federal efforts to reconstruct the southern states and protect the rights of Black citizens after 1865. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4212. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5213 - The Gilded Age and Early 20th Century Challenges: U.S. History, 1865-1932**

Topical study of major events in America, including Reconstruction; the rise of industry and the workers' response; westward expansion and the plight of Native Americans; urbanization and immigration; agrarian upheaval; Progressivism; World War I; the challenges of the 1920s and the onset of the Great Depression. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4213. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5216 - History of American Popular Culture**

Explores American popular culture from the early 1800s to the present. By tracing the development of various entertainment media, including theater, music, movies, and television sitcoms, this course probes how popular culture both reflected and shaped American values and behavior. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4216. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5217 - Consumer Culture**

This interdisciplinary course examines the dynamics of the consumer culture in the context of social, economic, and technological history. The analysis begins with 17th century European origins, and continue through recent world developments, emphasizing the U.S. since 1800. Note: Open to all students. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4217. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5219 - Depression, Affluence and Anxiety: U.S. History, 1929 to the Present**

Examines major developments, focusing on the causes of the Depression and efforts to combat it; World War II and postwar readjustments; the Cold War and challenges of world leadership; unparalleled prosperity; Civil Rights movement; the Vietnam War; and economic uncertainties amid general prosperity. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4219. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5220 - U.S. Foreign Policy Since 1912**

The main thrust is the emergence of the U.S. from isolation toward full-scale participation in the affairs of Europe and other areas. Special attention is given to U.S. intervention in two world wars, the Cold War, and the overextension of U.S. commitments since 1960. Restriction:

Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4220. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5222 - U.S. Society and Thought to 1860**

Major topics include the evolution of Protestantism from Puritans to Transcendentalists; humanitarian reforms such as abolition, temperance, and women's rights; European influences on American thought; the effect of industrialization on the development of class society; and American nostalgia for agrarian life. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4222. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5223 - U.S. Society and Thought Since 1860**

Topical survey of the main currents of American thought and their impact upon society. Topics include American philosophy, literature (extensively), art, music, immigration and urbanization, technology, extremism of both left and right, and education. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4223. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **HIST 5225 - Urban America: Colonial Times to the Present**

Rise of the American city from colonial times to present. Major emphasis on the process of urbanization since 1840: town promotion, the industrial city, immigration, boss politics and reform, urban technology, transportation systems, minorities, city planning, and the future of urban America. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4225, WGST 4225, WGST 5225, GEOG 4625. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5226 - Capitalism in America**

Explores the social, cultural, and political history of American capitalism from colonial times. Topics include entrepreneurship, labor, territorial and trading expansion, industrialization, the rise of corporations, economic cycles, technological developments, and the role of the state, all within global contexts. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4226. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5227 - American West**

Introduces the diverse peoples, places, and approaches to the development of the trans-Missouri West from prehistoric times to the present. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4227. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5228 - Western Art and Architecture**



Introduces Western art and architecture, emphasizing their historical context. Students are required to do book reports and a major research paper. Course includes walking tours and museum visits. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HIST 4228. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5229 - Colorado Historic Places**

Introduces community architecture, folklore, and history for all students. Students learn how to survey, describe, and designate significant historical structures and districts. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HIST 4229. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5230 - Women in the West**

Focuses on ways in which women, from the mid-19th century through the mid-20th century, of different races, classes, and ethnic background, have interacted and been active participants in the development of the Western states. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4230 and WGST 4230/5230. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5231 - History in Museums**

This core course for the museum studies area of public history introduces students to the theory and practice of museum operations. It covers the basics of museum administration, museum collection and preservation, and museum interpretation from both theoretical and practical points of view. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4231. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5232 - Historic Preservation**

Introduces the history, methodology, and goals of historic preservation. Guest speakers, field trips, research projects, and book reports. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4232. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5234 - Introduction to Public History**

An overview of history outside the academic setting. Students have the opportunity to learn about jobs through on-site visits and presentations made by people engaged in a wide variety of occupations in history other than teaching. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4234. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5236 - Colorado Mining and Railroads**

Focuses on the transportation network that shaped the inland West, and its key role in the extractive industry that gave Colorado its start and nourished the highest state through adolescence. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4236. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5238 - U.S. History Through Fiction**

Explores American history through novels, based on the idea that fiction offers a superb "window" through which to view the past, especially to understand the texture of American society. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4238. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5240 - National Parks History**

Introduces how the National Park Service uses history to identify, designate, preserve, and interpret America's most outstanding historic and natural history sites. After tours of NPS sites, students select from a wide range of projects. Note: Open to all students. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4240. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5242 - Oral History**

Trains public history students in the collection of oral history interviews. Students master core readings on the theory, practice, and ethics of oral history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4242. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5243 - Public History Administration**

Introduces students to the skills, practice, and ethics of public history administration. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4243. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5244 - Interpretation of History in Museums: Exhibits and Education**

This course allows students to gain in-depth knowledge of historical interpretation through exhibits and education in a museum setting. This class is designed for those preparing to work in history museums but is also appropriate for teachers and others who want to learn how museum programs interpret history with artifacts and other historical materials. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HIST 4244. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIST 5245 - Heritage Tourism**

History and historic sites have become big business in 21st century tourism. The heritage tourism industry is explored in this introductory course for all interested students focusing on how academic history and historians can partner with tourism and recreation interests.

Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HIST 4245. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIST 5260 - Digital Studies and Strategies**

This interdisciplinary course emphasizes developing media production, web, and GIS skills to design individual and group media projects based on students' research. Critiques and readings examine the successful confluence of media and historical content along with digital dissemination strategies. Cross-listed with HIST 3260. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIST 5303 - Sex and Gender in Modern Britain**

Examines modern British history by focusing on sex and gender as central aspects in people's lives. Considers the ways gender shapes the realms of politics, economics, society and culture in Britain from the 18th century to the present. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4303 and WGST 4303/5303. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIST 5306 - Survey of Feminist Thought**

Examines changes and continuities in feminist thought from the 18th century to the present, using historical and literary materials. Explores the ways that women's characteristics, experiences, and capabilities have been understood and challenged. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with ENGL 4306, 5306, HIST 4306, WGST 4306, 5306. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIST 5307 - History of Sexuality**

Explores the relationships between gender and norms, sexual practice, and ideas about sexuality in Europe and the United States. Examines how sex and sexuality have changed over time and how those changes relate to social, cultural, political and economic history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4307 and WGST 4307/5307. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **HIST 5308 - Crime, Policing, and Justice in American History**

Focuses on changing legal and cultural definitions of crime, the role of the police, the evolution of punishment in theory and practice, and the role of mass culture in shaping the social history of crime and justice. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4308. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5343 - Women & Gender in US History**

This course will explore women and gender as drivers of US history. From politics to popular culture, jobs to sexual empowerment, civil rights to economic restructuring, we will use gender as a lens to re-envision familiar stories about American history. Cross-listed with HIST 3343, WGST 3343, and WGST 5343. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5345 - Gender, Science, and Medicine: 1600 to the Present**

Examines the ways science and medicine have both shaped and been shaped by ideas about gender. Pays particular attention to the relationship between scientific/medical ideas about the sexes and the social organization of gender. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4345 and WGST 4345/5345. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5347 - History of Biology**

Examines the development of modern biology from the mid-18th century to the present. Students will look at intellectual, methodological, institutional and social contexts in an attempt to answer the question of how biology became the "pre-eminent" science. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4347. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5348 - Mind and Malady: A History of Mental Illness**

Examines the history of mental illness from the mid-18th century to the present, focusing on the institutionalization of the mentally ill, the origin of psychiatry, the development of models of mental illness and the evolution of clinical treatment. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4348. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5366 - Nature and Power in American History**

This course explores the relationships between human societies and environmental change in the history of North America. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 3366. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5411 - Modern Mexico**

Designed to familiarize students with the critical issues in Mexican political, economic and social history. Traces the emergence of independence and the difficult consolidation of an independent nation state. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4411, ETST 4411. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5412 - Mexico and the United States: People and Politics on the Border**

Examines the convoluted relations between these two republics, focusing on diplomatic, cultural and social interactions. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4412. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5414 - Nationalism and State Building in Latin America, 1750-1850**

Explores the problems of nationalism and post-colonial state building by examining the late colonial and early national periods of Latin American history. The course discusses the impact of the enlightenment, the events of the Wars of Independence, and the quandaries faced by the new nations. Restriction: Restricted to Graduate level students. Cross-listed with HIST 4414. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5415 - Social Revolutions in Latin America**

A theoretical framework and an empirical basis for understanding the large-scale social movements that have influenced the course of Latin American nations. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4415. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5417 - Commodities and Globalization**

Trading raw material & processed goods internationally has greatly affected world cultures & geopolitics. Tracing commodity chains since 1500 for food, fuel, industrial material & products, & intellectual property, this course will conclude with the effects of current regulations, marketing & environmental concerns. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4417. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5420 - Traditional China: China to 1600**

A general introduction to the history of China from the advent of historic civilization to the point of the great encounter with the West. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4420. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5421 - Modern China**

Surveys Chinese history in the modern era. Includes examination of Western domination of China, revolution, and internal fragmentation of China; Japanese attacks and World War II; and civil war and the communist revolution. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4421. Term offered: spring. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

### **HIST 5422 - Living through Mao's China: Life, Material Culture, Movies, 1949-76**

Introduces students to ordinary people's daily life in Mao's China (1949-1976) through an exploration of material culture, movies and scholarship. This course pays particular attention to the ways people's everyday living intertwined with politics. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4422. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **HIST 5431 - Modern Japan**

Course of Japanese history since the Perry expedition. Covers Japanese Westernization and industrialization, the expansion of empire and defeat in World War II, the occupation, and the amazing technological and social transformation since the occupation years. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4431. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5451 - Southern Africa**

An in-depth history of the clash of peoples and cultures in Africa south of the Zambezi River. African and Afrikaner political, economic and cultural development in a single land and the consequences of several competing nationalisms existing side by side are examined. Apartheid and African opposition to it are analyzed. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4451. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5455 - African Struggle for Independence**

An assessment of African leadership from the colonial era to the present. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4455. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5461 - The Modern Middle East**

Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4461. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5462 - Islam in Modern History**

This course studies Islamic thought and practice over the last two centuries in terms of major historical processes that have operated at local, national, and global scales. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4462, RLST 4462, RLST 5462. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5471 - The Second World War**

The war in its totality: causes, military strategies (equal treatment to European and Pacific theaters), campaigns, impact of technology and weapons, political and social upheaval. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4471. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5472 - The 1950s: Korean War, the Cold War and Social Transformation**

A critical and methodical exploration of several of the social, cultural, and political events of the 1950s. Investigates the complex interaction between politics and culture during this decade, paying close attention to anti-Communist thought and the Korean War. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4472. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5475 - The Vietnam War**

Covers the conflict in Vietnam, with roots in the period prior to World War II. Main topics include the rise of nationalism in French Indochina, the war against the French, the Northern moves to unify Vietnam, American intervention, and eventual victory of the Northern regime. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4475. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5490 - Weapons of Mass Destruction**

Weapons of mass destruction have affected politics, health, and environments around the globe. This course will examine the development, use, and consequences of these modern technologies of war and terror. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HIST 4490. Term offered: summer, fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5491 - United States History, 1865-1919**

Surveys the major intersections of politics, culture, and society in American history between 1865 and 1919. The course will be attentive to the diversity of American experiences and will explore domestic and international themes in United States history. Restriction: Restricted to

Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4491. Max hours: 3 Credits.  
**Semester Hours:** 3 to 3

### **HIST 5492 - United States History, 1919-1945**

Surveys the major intersections of politics, culture, and society in American history between 1919 and 1945. The course will be attentive to the diversity of American experiences and will explore both domestic and international themes in United States history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4492. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5493 - United States History, 1945-1973**

Surveys the major intersections of politics, culture, and society in American history between 1945 and 1973. The course will be attentive to the diversity of American experiences and will explore both domestic and international themes in United States history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4493. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5494 - Red and Blue America: U.S. History, 1973-Present**

Surveys the major intersections of politics, culture, and society in American history since 1973. The course will be attentive to the diversity of American experiences and will explore both domestic and international themes in United States history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed HIST 4494. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5503 - Topics in History of Science**

Themes vary from year to year. Possible topics: Darwinism, Nature of Memory, Time and Space, Origins. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4503. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5504 - Animals in U.S. History**

Human-animal relationships offer powerful and unexpected perspectives on the American past. An eclectic range of readings and viewings, written assignments and contemplative experiences will contextualize contemporary practices, beliefs, and ethics -- vegetarianism, hunting, pet-keeping, and many others -- in historical context. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4504. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5621 - Explorers and Exploration**



Examines the history of travel and exploration from the 13th century to the present. Readings draw primarily from first-person accounts to understand why people voyage, what they hope to discover, and what happens to them along the way. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4621. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5622 - Oceans In History**

Explores transoceanic exchanges, relations, and transformations in modern world history. Examines how historians analyze and conceptualize global interactions. Topics include voluntary and forced migrations, resistance and revolution, transoceanic economic relations, piracy, and environmental change. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4622. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5645 - Archival Management**

This course studies theory and principles pertaining to the management of current and non-current records, public and private archival materials, as well as the administration of archival manuscript depositories for housing records of historical value. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4645. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 5810 - Special Topics**

Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4810. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **HIST 5840 - Independent Study: History**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **HIST 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **HIST 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **HIST 5995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 1 to 15

### **HIST 6013 - Introduction to the Professional Study of History**

Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HIST 6840 - Independent Study: HIST**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **HIST 6931 - Readings: Special Subjects in History**

Readings in topics in history with varying subtitles reflecting course content. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Term offered: fall, spring. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **HIST 6939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Term offered: spring, summer, fall. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **HIST 6940 - Comprehensive Exam**

Preparation for and completion of comprehensive examination for History MA. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Max hours: 1 Credit. **Semester Hours:** 1 to 1

## **HIST 6950 - Master's Thesis**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 6

## **HIST 6951 - Masters Project: Advanced History Curriculum Development**

Students develop curricula for secondary-level history courses; must demonstrate thorough knowledge of subjects; understanding of historiographic and methodological problems; command of primary sources and their uses in teaching; and describe teaching strategies, methods, and assessments to be used in the curricula. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Permission of instructor. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 6

## **HIST 6952 - Master's Project: Public History**

Public history students may use one to six credits to complete a single public history project. Projects can entail creating an exhibit, organizing a museum or archival collection, conducting a preservation survey or similar activities. Students are required to prepare a paper describing the process and results of the project. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **HIST 6989 - Seminar: Special Subjects in History**

Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring. Repeatable. Max hours: 9 Credits. **Semester Hours:** 3 to 3

## **HIST 6992 - Seminar: Colorado Studies**

This advanced interdisciplinary seminar on Colorado starts with a survey of the published literature. Students then select a research topic of their own and complete a publishable paper using primary sources. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **Human Development & Family Reltn**

## **HDFR 1000 - Global Human Development & Learning**

The purpose of this course is to examine the contextual nature of human development and learning at the global level. Emphasis is placed on the ecological development of individuals and learning and schooling within familial, cultural and educational contexts. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **HDFR 1010 - Life Span Development in Ecological Settings**

This course is designed to introduce students to human development in ecological settings in particular family, school and community contexts as it occurs across the lifespan, including emotional, physical, and cognitive development, and emphasizes personal adjustment and achievement. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 1030 - Who am I? Cultural Identity, Family, Diverse Soc Sys**

This course will use ecological systems theory perspectives as a foundation for understanding diverse Latino family dynamics, the intersection between Latino families, schools and community systems and other critical issues that Latino family systems face in the United States. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 1111 - Freshman Seminar**

Restriction: Restricted to Freshman level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 2000 - Introduction to Family and Community Services**

Through ecological systems theories this course is designed to provide students with an introduction to family and community services within community and educational environments. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 2080 - Sex, Human Development and Family Systems**

Students will become familiar with human sexuality across the life span through behavioral science and ecological perspectives. Different aspects of sexuality including behavioral, biological, developmental and cultural will be examined. Implications for working with individuals, families, and couples through a behavioral science context will be explored. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 2200 - Love, Family and Human Development**

This course provides an introduction to understanding love, intimate relationships, and family relations through an ecological systems perspective. The course provides an exploration of contemporary diverse family systems and their relationships across the life span. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 3002 - Preparing to be a HDFR Professional**

In a seminar format, students will examine the ethics, value systems, and family policies and law affecting the Human Development and Family Relations profession. Students will utilize tools of professional preparation including goal-setting, building/refining resumes, and marketing skills and abilities. Restriction: Faculty or Academic Advisor approval is required to register. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 3020 - Black and Latino Children in Families and Schools**

This course will use ecological systems theory perspectives as a foundation for students to develop their understanding about Black and Latino children as members of family systems, school systems and community systems within cultural contexts. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 3050 - Children's Thinking and Assessment**

A review of the psychology of children's thinking emphasizing developmental changes in modes of thought. Topics include conceptual behavior, problem solving, intelligence, creativity, humor, play, and an introduction to diagnostic, formative and summative assessment. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 3100 - Adolescent Ecology**

Through ecological systems theories this course is designed to provide an understanding of adolescent ecological development and growth. Students will become familiar with adolescent development and growth from ecological perspectives in contexts of families, schools and communities. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 3250 - Families in Global Perspectives**

Students will become familiar with family life across the world. Through ecological systems theories, this course is designed to provide an understanding of families in global perspectives. The impact of family policy and practices on international families will be examined. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 3400 - Love, Couples and Family**

This course examines the development and maintenance of couple and family relationships through family therapy based concepts, family systems theories and other family theories. Topics include communication patterns, stress and conflict management, decision making and goal-setting within the family. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 3500 - Introduction to Higher Education**

The course examines the history and structure of the institutions higher education in U.S. This course will also examine the relationship between institutions of higher education, students, faculty, administrators, and society at large. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 4001 - Families and Parenting**

This course provides an advanced overview of theories and practices that impact culturally and linguistically diverse families and the parenting process through family systems and ecological perspectives. Specifically, there is a focus on the parent-child relationship through adolescence. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 4002 - Family Life and Community Programming I**

This course teaches the principles, philosophies, models, and strategic methods of family life education for strengthening interpersonal and family relationships. Culturally competent students will learn about the development and implementation of effective educational programs and experiences within different community settings. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 4003 - Leadership and Organizations**

This course provides an understanding of leadership theory and practice in community and educational environments. Students will learn about important aspects about leading diverse community and educational organizations including staff supervision, strategic planning, advancing the organization and maintaining integrity. Cross-listed with HDFR 5003. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 4004 - Family and Comm. Prog. II Grant Writing/Fundraising**

This course provides an understanding of developing skills on grant writing and fundraising as related to family, community and educational organizations/agencies. Students will learn about important aspects about grant writing, fundraising fundamentals and funding models for sustainability. Cross-listed with HDFR 5004. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 4010 - Family and Cultural Diversity**

The examination of familial, gender, cultural, linguistic, social and other ecological factors on diverse family systems in the United States will be covered. An ecological theoretical analysis of minority family systems within a familial, educational and social justice perspective will be explored. Cross-listed with HDFR 5010. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 4040 - Latino Families in School and Communities**

This course will use ecological systems theory perspectives as a foundation for understanding diverse Latino family dynamics, the intersection between Latino families, schools and community systems and other critical issues that Latino family systems face in the United States. Cross-listed with HDFR 5040. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 4045 - Abuelos (Grandparents) Latino Families**

The course will focus on the social gerontology of Latinos families in later life. Specifically, the course will examine how ecological factors including familial, cultural, social, economic, health, cognitive and educational, impact the lives of Latino older person's in the contexts of family systems. Cross-listed with HDFR 5045. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 4050 - Foundations of Student Affairs**

This course examines theories of college student development including student learning and growth during the postsecondary years. This course will provide an introduction to psychosocial, cognitive, moral, and social identity development theories used to explain college student development. Cross-listed with COUN 5050. Repeatable. Max Hours: 6 Credits.

**Semester Hours:** 3 to 3

### **HDFR 4075 - Family Policy & Law**

In this course students will identify, develop, implement and evaluate social policies and laws that effect the well-being of families. Through a family systems perspective, students will examine the law, social services, education, the economy, religion, and politics impact families. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 4080 - Global Family Resource Management**

This course examines the allocation of family resources (social, financial and material assets), the influence of various ecological systems, the effect on family functioning and goal-setting from a global perspective. Practical applications for Family Relations professionals are included. Cross-listed with HDFR 5080. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 4090 - Helping Profession Skills in HDFR**

This course is designed to provide an overview of essential skills required in a variety of helping situations and settings. Course content includes the development of accurate listening, empathy, reflection, and inquiry skills. Implications for working with individuals, families, and couples will be examined. Cross-listed with HDFR 5090. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 4130 - College Student Development**

This course examines theories of college student development including student learning and growth during the postsecondary years. This course will provide an introduction to psychosocial, cognitive, moral, and social identity development theories used to explain college student development. Cross-listed with COUN 5130. Repeatable. Max Hours: 6 Credits.

**Semester Hours:** 3 to 3

### **HDFR 4200 - Adult Ecology**

The emphasis is on the major theories of adult ecology and growth and the implications of classic and contemporary research in the community. Specifically, biological, psychological, psychosocial, cognitive, and cross-cultural theories will be explored. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **HDFR 4260 - Family Systems and Social Justice**

Relying on ecological systems theories, this course will introduce students to families and family systems. Students will investigate how families experience (in)justice in the areas of access to education, community services, and employment. Cross-listed with HDFR 5260. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 4300 - Families in Later Life**

Students will become familiar with the importance of families in later life. Through family systems and ecological systems theories, this course is designed to provide an understanding of the importance of family relationships and implications for practice, research, and policy. Cross-listed with HDFR 5300. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 4500 - Diversity, Inclusion, Social Justice in Higher Education**

An examination of society, media, and public and educational policy and their impact on higher education access and persistence for marginalized groups. Students are called to consider how student affairs professionals might promote social justice for marginalized student groups. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 4888 - LGBTQ Family Systems**

This course examines diverse Lesbian, Gay, Bisexual, Transgender and Queer (LGBTQ) family systems through ecological systems perspectives and family theories. The course provides an exploration of contemporary research, policy and practice as it pertains to LGBTQ families. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 4930 - Human Development and Family Relations Internship**



This course provides supervised practicum/field experience to Human Development and Family Relations students. Students will apply theory and evidence-based knowledge in professional situations, enhancing the development of their professional identities and career goals by working within and evaluating community-based organizations. Prereq: HDFR 3002. Repeatable. Max Hours: 5 Credits. **Semester Hours:** 1 to 5

### **HDFR 5003 - Leadership and Organizations**

This course provides an understanding of leadership theory and practice in community and educational environments. Students will learn about important aspects about leading diverse community and educational organizations including staff supervision, strategic planning, advancing the organization and maintaining integrity. Cross-listed with HDFR 4003. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 5004 - Family and Comm. Prog. II Grant Writing/Fundraising**

This course provides an understanding of developing skills on grant writing and fundraising as related to family, community and educational organizations/agencies. Students will learn about important aspects about grant writing, fundraising fundamentals and funding models for sustainability. Cross-listed with HDFR 4004. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 5010 - Family and Cultural Diversity**

The examination of familial, gender, cultural, linguistic, social and other ecological factors on diverse family systems in the United States will be covered. An ecological theoretical analysis of minority family systems within a familial, educational and social justice perspective will be explored. Cross-listed with HDFR 4010. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 5040 - Latino Families in School and Communities**

This course will use ecological systems theory perspectives as a foundation for understanding diverse Latino family dynamics, the intersection between Latino families, schools and community systems and other critical issues that Latino family systems face in the United States. Cross listed with HDFR 4040. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 5045 - Abuelos (Grandparents) Latino Families**

The course will focus on the social gerontology of Latinos families in later life. Specifically, the course will examine how ecological factors including familial, cultural, social, economic, health,

cognitive and educational, impact the lives of Latino older person's in the contexts of family systems. Cross-listed with HDFR 4045. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 5080 - Global Family Resource Management**

This course examines the allocation of family resources (social, financial and material assets), the influence of various ecological systems, the effect on family functioning and goal-setting from a global perspective. Practical applications for Family Relations professionals are included. Cross-listed with HDFR 4080. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 5090 - Helping Profession Skills in HDFR**

This course is designed to provide an overview of essential skills required in a variety of helping situations and settings. Course content includes the development of accurate listening, empathy, reflection, and inquiry skills. Implications for working with individuals, families, and couples will be examined. Prereq: COUN 5010. Cross-listed with HDFR 4090. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 5260 - Family Systems Social Justice**

Relying on ecological systems theories, this course will introduce students to families and family systems. Students will investigate how families experience (in)justice in the areas of access to education, community services, and employment. Cross-listed with HDFR 4260. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 5300 - Families in Later Life**

Students will become familiar with the importance of families in later life. Through family systems and ecological systems theories, this course is designed to provide an understanding of the importance of family relationships and implications for practice, research, and policy. Cross-listed with HDFR 4300. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 6000 - Family Theories**

Students will examine the methods of inquiry and the basic foundations of contemporary family theory. Using a family systems perspective, students will utilize and analyze theory in the exploration of diverse and changing family dynamics in a societal context. Cross-listed with HDFR 7000. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 7000 - Family Theories**

Students will examine the methods of inquiry and the basic foundations of contemporary family theory. Using a family systems perspective, students will utilize and analyze theory in the

exploration of diverse and changing family dynamics in a societal context. Cross-listed with HDFR 6000. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 7240 - Latin@ Families in Schools and Communities**

This course will use ecological systems theory perspectives as a foundation for understanding diverse Latino family dynamics, the intersection between Latin@ families, schools and community systems, mental health systems, and other critical issues that Latin@ family systems face in the United States. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Humanities**

### **HUMN 1012 - The Humanistic Tradition: Modes of Expression**

Familiarizes students with humanistic modes of expression through the study of history, literature, philosophy, music, and the visual and dramatic arts. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 1111 - First Year Seminar**

Restriction: Restricted to Freshman level students. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 4251 - Introduction to Legal Studies**

A survey of the United States legal system, including lawmaking powers, jurisdiction, court procedures, professional ethics and major principles of business law, contracts, estates and probate, family law, property and torts. Cross-listed with HUMN 5251/SSCI 4241/SSCI 5251. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 4325 - First Amendment: Theory and Context**

First Amendment jurisprudence including free speech/responsibility, sedition/seditious libel/dissent, prior restraints, time/place/manner restrictions, hate/intimidating speech, defamation, privacy/security tensions, intellectual property/public good, advertising, corporate speech, sexual expression, and public status of religion. Cross-listed with HUMN 5325, SSCI 4325, SSCI 5325, PSCI 4325 and PSCI 5325. Term offered: spring. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **HUMN 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form

completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **HUMN 4984 - Topics: Interdisciplinary Humanities**

Concerned with specialized aspects of the humanities from various theoretical and research perspectives. These courses are interdisciplinary and serve as a forum for discussion of individual projects and theses. Term offered: fall, spring. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **HUMN 5000 - 19th and 20th Century Continental Philosophy**

A seminar on key problems and thinkers in the nineteenth & twentieth century continental philosophical traditions and their contemporary significance. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4000/5000 and SSCI 5000. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5013 - Methods and Practices of Graduate Interdisciplinary Humanities**

The second of three required Master of Humanities core courses, this course introduces beginning graduate students to methodologies and intellectual frameworks for gathering, organizing, and developing interdisciplinary research. Focus is on the application of theories and methods of research, interpretation and analysis in humanistic research through readings that explore philosophical and cultural discourses have altered theory and method. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Restriction: Restricted to Graduate Level Students. Cross-listed with PHIL/SSCI 5013. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5020 - Foundations and Theories of Interdisciplinary Social Science**

The first of the Master of Social Science core courses, this course exposes beginning graduate student to critical , key analytic models, and their application in disciplines that comprise the social sciences (classical anthropology, sociology, sociology of religion, philosophy of history, political theory, classical psychology, etc.) for the purpose of graduate-level interdisciplinary social science research. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SSCI 5020 and PHIL 5020. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5025 - Foundations and Theories of Interdisciplinary Humanities**

Exposes the beginning graduate student to exemplary works and methodologies of disciplines oriented to humanities and social sciences, such as philosophy, sociology, history, communication, fine arts, and literature. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SSCI 5025. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5101 - Pragmatism: Classical American Philosophy**

The most significant philosophical tradition born in the United States is pragmatism. Examines several of the most important classical works of this tradition, the influence of thinkers who have helped pragmatism, and the contemporary relevance of this tradition. Figures who may be included in this course are: Emerson, Pierce, Royce, James, Dewey, Mead, Rorty. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4101, 5101, SSCI 5101. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5220 - Aesthetics and the Philosophy of Art**

Introduction to major theories of aesthetics and contemporary discussions of problems in aesthetics and the philosophy of art, including topics such as: the nature of art, interpretation and evaluation in art. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4220/5220. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5242 - Bioethics**

Examines some of the major moral issues confronting the nation's health care system. The class will search for solutions to such problems as financing health care for those unable to do so on their own, determining the extent of a patient's right to both refuse and demand certain types of medical treatment, and allocating scarce medical resources such as life-saving vital organs. The springboard for examining these issues will be the doctor or patient relationship framed by the moral principles of respect for persons and beneficence. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4242, PHIL 5242, SSCI 5242. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5251 - Introduction to Legal Studies**

A survey of the United States legal system, including lawmaking powers, jurisdiction, court procedures, professional ethics and major principles of business law, contracts, estates and probate, family law, property and torts. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 4251/SSCI 4241/SSCI 5251. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5325 - First Amendment: Theory and Context**

First Amendment jurisprudence including free speech/responsibility, sedition/seditious libel/dissent, prior restraints, time/place/manner restrictions, hate/intimidating speech, defamation, privacy/security tensions, intellectual property/public good, advertising, corporate speech, sexual expression, and public status of religion. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 4325, SSCI 4325, SSCI 5325, PSCI 4325 and PSCI 5325. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5540 - Law, Diversity and Community in United States History**

Engaging extensive primary and secondary source material, course applies an interdisciplinary approach to diversity and conflict that often surrounds the quest for economic, moral and social inclusion in the United States. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SSCI 5540. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5550 - Paris 1910: Art, Philosophy and Psychology**

Traces the influences of philosophy, psychology, and art in the English, French, and German-speaking worlds in the early twentieth century. This intellectual history is extended to broader cultural and political contexts. Key period is between 1910 and 1968, when modernity's key aspirations and tensions became explicit. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 5550 and SSCI 5550. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5600 - Philosophy of Religion**

Nature of religion and methods of studying it. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4600, 5600, RLST 4060, 5060, and SSCI 5600. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5650 - Reflections on Modernity**

Explores modernity as a historical epoch and a theoretical space, looking at the commentaries and reflections of influential 20th century thinkers including Adorno, Arendt, Levinas, Merleau-Ponty, Habermas and Foucault. Examines how the theoretical inclinations of modernity were influenced by politics, art, literature and culture. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 5650 and SSCI 5650. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5660 - Visual Arts: Interpretations and Contexts**

Provides graduate-level interdisciplinary study in the historiography, methodologies, and theories used to understand how visual arts, including painting, sculpture, photography, film and performance art influence the making of culture. Students gain critical skills for analyzing a

variety of visual and aesthetic products of culture. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5710 - Women and Religion**

A sociological exploration of the contemporary roles of women in religion. Course examines American and world religious groups with an eye to women's involvement. Considers how women have changed these traditions as they take on leadership roles and discusses the tensions that arise within these traditions as a result of their expanded participation.

Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SSCI 4710/5710, WGST 4710/5710, RLST 4710/5710. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5720 - Sexuality, Gender and Their Visual Representation**

Studies sexuality, gender and identity representation from classical antiquity through the present in the visual arts. Uses the literature of visibility, feminism, race and queer theory. Explores representations of femininity, masculinity and androgyny and their reinforcement and challenge to gender-identity norms. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SSCI 5720 and WGST 5720. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5750 - Philosophical Psychology**

Explores debates about psyche and body, mind and world, self and others, and consciousness and nature. Examines the philosophical questions related to those debates that arise within theories of perception, affect and cognition offered by influential psychological models.

Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4755, PHIL 5755 and SSCI 5750. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5770 - Imperialism, Post-Colonial Theory & Visual Discourse**

Western empires disseminate political, social, economic & cultural practices through complex interplay of cultural practices. Visual production is a complex site for meaning making within imperialism. Examines how visual discourses operated to create meaning for audiences, through focus on postcolonial critique. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-list SSCI 5770. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5833 - Existentialism**

Examines one of the most influential movements in recent European thought, beginning with existentialism's 19th century roots, and continuing on to the existentialist philosophers of the

20th century. Figures covered may include Dostoyevsky, Kierkegaard, Nietzsche, Heidegger, Sartre and de Beauvoir. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4833/5833 and SSCI 5833. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5840 - Independent Study: HUMN**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **HUMN 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **HUMN 5920 - Philosophy of Media and Technology**

A philosophical examination of interrelationships between contemporary media, technology, and their impacts upon character of contemporary life and values. Topics may include ethics, epistemology, democracy, advertising, media literacy and criticism. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4920, 5920, SSCI 5920. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5924 - Directed Research and Reading in Interdisciplinary Humanities**

The first of the Master of Humanities core courses, this course provides beginning graduate students grounding in critical theorists, key analytic models, and their application in disciplines which comprise the humanities (philosophy, literature, art history, visual studies, history, communication) for the purpose of graduate-level, interdisciplinary humanities research. Examines questions about reality, knowledge, ethics that affect research and writing in the humanities. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Term offered: spring, fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5933 - Philosophy of Eros**



What does it mean to understand philosophy as an erotic activity? This question will be examined, first by studying Plato's dialogues-such as Lysis, Symposium and Republic-and then by reading texts from Sigmund Freud, Michael Foucault and others. Cross-listed with PHIL 4933, WGST 4933/5933 and SSCI 5933. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HUMN 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **HUMN 5950 - Master's Thesis**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

### **HUMN 5960 - Master's Project**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

### **HUMN 5984 - Topics: Interdisciplinary Humanities**

Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **HUMN 6010 - Methods and Theories of Feminism and Gender**

This course provides graduate-level interdisciplinary study in historiography, methodologies and theories of women's, gender, and sexuality studies and considers how culture is constructed around these categories. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with WGST and SSCI 6010. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Information Systems**

### **ISMG 2050 - Introduction to Business Problem Solving**

Focuses on the technology and problem solving skills necessary for students to succeed both at school and in the business world. Focuses on business decision making using spreadsheets, database and web tools. Students solve problems in statistics, accounting, finance, marketing, management and information systems. The objective is to provide problem solving methods necessary for students to succeed in the business community. This is a business core course therefore a grade of a 'C' or better must be earned to satisfy Business graduation and prerequisites for other business courses. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 2075 - Introduction to Microsoft Access**

Introduction to Microsoft Access prepares students to use data bases to analyze data and solve real-life business problems. It challenges students to use critical thinking and analysis to find efficient and effective solutions to real-life business situations. Students will use databases to solve problems in accounting, finance, and information systems. Prereq: Computer Competency. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **ISMG 2800 - Designing for the Web**

Students examine how the Web is evolving to support a variety of business needs. The course covers the design and usability principals necessary for improving online interactions via traditional websites as well as using technologies promoting collaboration and information sharing (e.g. social networks, blogs, wikis, forms). Topics include: the principles of web page and web site design; hypertext markup language, cascading style sheets, streaming video, online collaboration technologies; client and server scripting; and the process of testing and publishing web sites. Coreq: ISMG 2050. As a corequisite, ISMG 2050 can be taken concurrently or completed prior. If completed prior, must earn a C- or higher. Restriction: Restricted to undergraduate Business majors at a sophomore standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 3000 - Technology In Business**

Covers the role of information technology in business organizations. It exposes students to innovative and interesting technologies and illustrates how those technologies are changing the way businesses operate. It highlights the importance of IT in organizations, including the relationship between technology & competitiveness, the alignment of business and IT strategy, the development and management of an effective IT infrastructure and the use of IT strategy, the development and management of an effective IT infrastructure and the use of IT-enabled organizational processes. Topics include: coping with information intensity, web sites, social networks and blogs; business intelligence at each level of management; IT based reports and data; collaboration and the impact of technology on organizational interaction; the use of IT for controlling and enhancing business processes; security, privacy & disaster recovery; and emerging technologies. Note: Business core course therefore a grade of a "C" or better must be earned to satisfy graduation requirements. Restriction: Restricted to undergraduate students at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 3300 - Social Media in Business**

Social media has become a central component of many business activities including marketing, HR, product management and the supply chain. In this course, we examine the organizational use of social media technologies such as blogs and social networks, as well as the use of social media analytics to drive business strategy. Cross-listed with MKTG 3300. Prereq: MKTG 3000 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 3500 - Enterprise Data and Content Management**

The success of today's business often hinges on the ability to turn mountains of data into critical information to make right decisions quickly and efficiently. This course introduces students to data, content and multimedia management using current enterprise data management tools. Topics include: Oracle SQL for relational database and for multi-media content; Oracle forms and reports, XML, and content management. Prereq: ISMG 2050 with a grade of C- or higher or department approved equivalent transfer credit (may need 1-credit ISMG 2075 as supplement). Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 3600 - System Strategy, Architecture and Design**

This course is designed to provide the understanding of current concepts related to information systems development in an organizational context. It emphasizes the interactive nature of the analysis and design process. Topics include: requirements analysis, model based analysis and design; evaluating outsourcing, COTS and other systems acquisition options; and quality, six-sigma, and ethics in design. New concepts such as agile modeling and extreme programming are covered. Prereq: ISMG 2050 with a grade of C- or higher or department approved equivalent transfer credit (may need 1-credit ISMG 2075 as supplement). Coreq: ISMG 3500. As a corequisite, ISMG 3500 can be taken concurrently or completed prior. If completed prior, must earn a D- or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 3939 - Internship**

Supervised experiences involving the application of concepts and skills in an employment situation. To enroll in an internship, students must work with the Experiential Learning Center on campus and have a 2.40 GPA or higher. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ISMG 4028 - Travel Study Topics**

Join your classmates in an international travel study course to understand the business operations of another culture. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ISMG 4200 - Building Business Applications**

Examines how software platforms for mobile business applications are designed and implemented. Usability, logic, and platform selection issues are highlighted through the development of simple mobile business systems. Includes programming concepts, interface design; storing, retrieving, and manipulating information; real time decision making; platform selection, testing and deployment. Prereq: ISMG 2800 with a D- or higher. Coreq: ISMG 3500. As a corequisite, ISMG 3500 can be taken concurrently or completed prior. If completed prior, must earn a D- or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 4300 - Information Security and Compliance**

This course covers information security threats and various mechanisms available to organizations to defend against information compromise. It offers thorough analysis of state, national, and international information security regulations with which businesses must comply, including the Sarbanes-Oxley, Gramm-Leach-Bliley and Hippa Acts. The regulatory compliance analysis will include measures the organizations must and should perform to be in compliance. Coreq: ISMG 3000. As a corequisite, ISMG 3000 can be taken concurrently or completed prior. If completed prior, must earn a C or higher. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 4400 - Programming Fundamentals with Python**

This course is designed to provide a thorough introduction to Python and fundamental programming concepts like data structures, networked application program interfaces, files and databases. Principles of object-oriented programming and secure programming practices are demonstrated using programming constructs taken from the business domain. Students are required to design and create their own applications for data retrieval, processing, and visualization. Prereq: ISMG 2800 with a D- or higher. Co-req: ISMG 3500. As a corequisite, ISMG 3500 can be taken concurrently or completed prior. If completed prior, must earn a D- or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 4450 - Web Development Immersive**

This course is designed to simulate what you'll experience in a real work environment, and covers the languages, frameworks, and computer science fundamentals essential to a career in web development. It will cover introduction to programming and Front End Development,

Server Side Programming with Node, Front End frameworks and Single Page Applications, and Data Structures and Algorithms, as well as a capstone project. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 12 Credits.

**Semester Hours:** 12 to 12

### **ISMG 4700 - Business Data Communications and Networking**

Provides an in-depth knowledge of data communications and networking requirements including: networking and telecommunications technologies, hardware, and software. Emphasis is upon the analysis and design of networking applications in organizations. Management of telecommunications networks, cost-benefit analysis, and evaluation of connectivity options are also covered. Students learn to evaluate, select, and implement different communication options within an organization. Topics include: network hardware and software; network configuration; network applications; distributed versus centralized systems; network architectures, topologies and protocols; network performance analysis; privacy, security, reliability; management of telecommunications, and communications standards. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 4750 - Business Intelligence and Financial Modeling**

In this course, the student learns to analyze and solve financial problems with spreadsheet models, apply Oracle Financial and Business Intelligence software that is widely used in corporate financial operations and model risk and uncertainty with Monte Carlo software. Prereq: ISMG 2050 with a grade of 'C-' or higher, FNCE 3000 and ISMG 3000 (ACCT 4054 may substitute for ISMG 3000) all with a grade of 'C' or higher. Cross-listed with FNCE 4750. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 4760 - Customer Relationship Management**

This marketing-theory driven course examines customer relationship management (CRM) as a key strategic process for organizations. Composed of people, technology and processes, effective CRM optimizes the selection or identification, acquisition, growth and retention of desired customers to maximize profit. Besides presenting an overview of the CRM process, its strategic role in the organization and its place in marketing, students have an opportunity to create simulated CRM database using popular software package that help to illustrate what CRM can do, its advantages and limitations. Prereq: MKTG 3000 and ISMG 3000 both with a grade of C or higher. Cross-listed with MKTG 4760. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 4780 - Accounting and Information Systems Processes and Controls**

The course is designed to develop knowledge and skills used to understand and evaluate corporate accounting processes and systems. It focuses on financial and information system

internal controls and the flow of corporate information through accounting system. A financial system objective and risk assessment approach is used to present concepts and techniques for evaluating the adequacy of system processes and controls. Cross-listed with ACCT 4780, 6510 and ISMG 6510. Prereq: Completion of ACCT 2200, ACCT 2220 and ACCT4054 with a grade of 'C' or better. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 4785 - Ethics: A Formula for Success**

Students will learn how to spot and address red flags that foster unethical behavior in both publicly-traded and privately-held businesses. Governance and stakeholder management techniques that incentivize ethical behavior will be highlighted using examples of companies that are financially successful by "doing the right thing." Principle-based ethics are emphasized, namely, integrity, trust, accountability, transparency, fairness, respect, viability, and compliance with the rule of law. Cross-listed with MGMT 3420, MGMT 6420, ISMG 6885. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 4840 - Independent Study**

Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 8

### **ISMG 4900 - Project Management and Practice**

Covers the factors necessary for successful management of enhancement projects. Both technical and behavioral aspects of project management are discussed. The focus is on management of development for enterprise-level systems. Topics include: managing the system lifecycle; requirements determination, logical design, physical design, testing, implementation; metrics for project management; managing expectations: superiors, users, team members and others related to the project; determining skill requirement and staffing the project; cost-effectiveness analysis; reporting and presentation techniques; effective management of both behavioral and technical aspects of the project; change management. Note: Successful completion of this course meets the educational requirements to sit for both the PMP and CAPM exams. Prereq: Students must be a junior status and have completed either: 1. ISMG 3000 or ACCT 4054 and MGMT 3000 and MKTG 3000, OR 2. ISMG 3000 and ISMG 3500 and ISMG 3600. Restriction: Restricted to undergraduate students in the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 4950 - Special Topics**

Seldom offered. This course varies from offering to offering. Typically, it is a research-oriented course exploring new developments in information systems. Prerequisites vary according to

topic. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ISMG 5939 - Internship**

Supervised experiences involving the application of concepts and skills in an employment situation. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ISMG 6020 - Programming Fundamentals with Python**

This course is designed to provide a thorough introduction to Python and fundamental programming concepts like data structures, networked application program interfaces, files and databases. Principles of object-oriented programming and secure programming practices are demonstrated using programming constructs taken from the business domain. Students are required to design and create their own applications for data retrieval, processing, and visualization. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6028 - Travel Study Topics**

Join your classmates in an international travel study course to understand the business operations of another culture. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ISMG 6040 - Business Process Management**

Designing effective information systems for business requires an awareness of the organization(s) business processes and how to manage and streamline them. The objectives of the course are for students to understand the importance of business processes; the main types of business processes; and the evolution of business process management; business process outsourcing; business process re-engineering; business process redesign; technology enabled business processes; and automated workflow. An important activity is graphically mapping business processes, which are transformed into an application or set of applications. The organization needs to manage the electronic workflow to monitor that the work gets done and allow changes to the workflow. Case studies of organizations are studied for most topics to enhance understanding. The group projects let students apply their knowledge of the course to a specific organization. By the end of this course students should have an appreciation of the important process-centric issues in business systems design. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ISMG 6060 - Analysis, Modeling and Design**

Provides an understanding and application of systems analysis and design processes. Students are exposed to system development life cycle (SDLC), structured systems analysis and design methods, object-oriented analysis and design methods, prototyping and commercial off-the-shelf package software approaches, and joint and rapid application development. Emphasizes the skills required for system analysts such as analytical, interpersonal, technical, fact-finding, and project management skills. Topics include data, process and object modeling, input-output and user interface design, and systems implementation and support. To provide an opportunity to develop these skills, an information system project is completed by a group of students. Students use a Case tool for their group project. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ISMG 6071 - Introduction to Health Information Technology**

Examines what needs transforming in healthcare to improve value, safety and appropriateness of care, and what the role of IT is in that transformation. It also examines the challenges of cultural change and IT strategy in succeeding with clinical information projects. Differences between installation, implementation, transition and actual transformation are suggested and methods for managing subcultures in healthcare (IT, clinical, administrative) are reviewed. Cross-listed with HLTH 6071. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ISMG 6072 - Fundamentals of Health Information Technology Management**

Provides an introduction to the management of information technology in healthcare. A description of information processing, the origin, content, evolution of healthcare information systems and the methodologies deployed to acquire and manage information requirements are discussed. Cross-listed with HLTH 6072. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ISMG 6080 - Database Management Systems**

The success of today's business often hinges on the ability to utilize critical information to make the right decisions quickly and efficiently. Transforming mountains of data into critical information to improve decision making is a skill every business decision maker must possess. This focus course covers the database design topics with a focus on enabling business decision making. Detailed topics include collecting, capturing, querying and manipulating data (using



SQL and QBE) for simple to medium complex business applications. Commercial database products are utilized to demonstrate the design of database applications in management, marketing, finance, accounting, and other business areas. Students will be able to design and implement simple to medium complex database applications after successful completion of this course. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6120 - Network Design and Analysis**

Communication, knowledge sharing, and information acquisition within and between businesses are critical for long term strategic business success. Technological advancements are radically changing the way business communication and knowledge sharing are performed. This course will briefly examine the traditional concepts of local and wide area networks for reference purposes, but then will focus on how newer technologies are changing business practices. Traditional local and wide area network concepts that will be covered in this course include WiFi wide area networks, wireless local area networks, cellular networks, and additional supporting services. Newer technologies that will be covered include social computing, Internet of Things, and artificial Intelligence. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6180 - Information Systems Strategy**

Digital strategy is the application of digital technologies to business models to form new differentiating business capabilities. The course starts with the highlights of genesis and importance of IT in organizations, including the relationship between digital technology and competitiveness. Then, the development and management of an effective digital infrastructure are discussed. Realizing that the effective use of digital technology requires the alignment of competitive strategies, business processes, and applications, the course takes a top management perspective on the development of policies and plans that maximize the contribution of digital technologies to organizational goals. A broad overview of how systems support the operational, administrative, and strategic needs of organizations is covered. Cross-listed with BUSN 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6200 - Global Information Systems**

Will focus on managing information technology globally and the new organizational and information technology designs that firms are establishing to meet the ever-growing global requirements. The course will cover such issues as how information is used and how

information technology is deployed by multinationals in different countries, the state of information technology and telecommunication industries in countries around the world, how global firms gain strategic benefits from information technology, and how firms manage and use global virtual teams. Prereq: ISMG 6040 or 6120 or BUSN 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6220 - Business Intelligence Systems and Analytics**

This course covers the collection of computer technologies that support decision making. These technologies have had a profound impact on corporate strategy, performance, and competitiveness. These techniques broadly encompass analytics, business intelligence, and decision support systems. The discussion is organized around key enablers of the three types of analytics (1) descriptive analytics including data warehousing, business reporting, decision dashboard/ scorecards, visual analytics, (2) predictive analytics including Web Analytics, Web Mining and Social media Analytics, and (3) prescriptive analytics including decision analytics and big data analytics. The course concludes with emerging trends and topics in business analytics, including geospatial in analytics, location-based and consumer-oriented analytical applications, mobile platforms, and cloud-based analytics. The recommended prerequisite for this course is ISMG 6080. If you are familiar with database management systems and have worked with such systems (e.g., ACCESS) in the past, you satisfy the prerequisite requirements for this course. Cross-listed with BUSN 6812. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6240 - Website Development Practice and Technologies**

Presents a broad coverage of design principles and techniques to develop effective web sites. The course emphasizes: (1) understanding the principles of web page and web site design and the process of publishing web pages, (2) developing client-side scripts for use in web sites, (3) using server-side programs or scripts to develop dynamic web sites using databases, and (4) understanding technologies for managing large web sites including XML schemas, content management systems and web services. If you have relevant experience in database and programming please contact the instructor for permission to waive the prerequisite of ISMG 6020. Prereq: ISMG 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6280 - Service Oriented Architecture**

Explores "Service Oriented Architecture" (SOA), which refers to a design pattern made up of components and interconnections that stress interoperability and location transparency. Covers the latest heterogeneous models for carrying out large scale distributed computing using Web services. The fundamentals of defining, designing, building, testing and rolling-out a SOA system

are explored using tools from major Web service vendors. Also, looks at the impact of SOA on software quality, efficiency, performance and flexibility. Prereq: ISMG 6020. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6320 - Innovative Health Information Technologies**

Learn how innovative health info technologies shape and redefine healthcare by enhancing medical care through scope and scale effects, providing tech efficiencies in delivery of care, utilizing advance tools for patient Ed and self-care, network-integrated decision support, e-business models & opportunities for e-health. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6340 - Cloud Computing Concepts, Tools, and Security**

This course provides an introduction to cloud computing concepts, capabilities, and scenarios where cloud computing technology can be leveraged. Students will learn the basic building blocks of cloud computing, investigate the various types and models of cloud computing, and identify how businesses can implement these technologies. This class uses hands-on labs to give students real-world practice on how to configure and secure a cloud computing environment. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6420 - Global Enterprise Systems**

Examines the evolution of global enterprise systems - from internally focused enterprise resource planning (ERP) client or server systems to externally focused eBusiness. Studies the types of issues managers need to consider in implementing cross-functional integrated enterprise systems. Examines the general nature of global enterprise computing, re-engineering principles and the technical foundations of client or server systems and enterprise information architectures. Students learn about the global enterprise systems marketplace. Topics include the tools and methodology, modules, processes and industry initiatives. Finally, the course looks into the future and predicts enterprise system trends. The objective of the course is to make students aware of the potential and limitations of global enterprise systems. The objective will be reached through case studies, lectures, guest speakers and a group project. Coreq: ISMG 6180 or BUSN 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ISMG 6430 - Information Systems Security and Privacy**

Designed to develop knowledge and skills for security of information and information systems within organizations. Focuses on concepts and methods associated with planning, designing, implementing, managing, and auditing security at all levels and on all systems platforms, including enterprise systems. This course presents techniques for assessing risk associated with accidental and intentional breaches of security as well as disaster recovery planning. For the best outcome it is recommended that you complete ISMG 6180 or BUSN 6610 prior to taking this course or during the same term as you take this course. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ISMG 6450 - IT Project Management**

Focuses on how firms successfully manage the adoption of It. Projects and program management principles are the primary focus of this course. Topics covered include approaches to prioritizing projects, estimating cost and time-to-market, build vs. buy decision, planning, monitoring and controlling implementation, measurement, total cost of ownership, effective management of both behavioral and technical aspects of the project and change management. For the best outcome it is recommended that you complete ISMG 6180 or BUSN 6610 prior to taking this course. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ISMG 6460 - Emerging Technologies**

Provides an introduction to the expansive array of information technologies that form the infrastructure of a modern business enterprise. Emphasis is placed on learning conceptual technological foundations and understanding the business value of the various technologies. The purpose of the course is to develop the student's ability to discuss recent technological advancements with other It professionals and management. Technology assessment is emphasized. Prereq: ISMG 6180 or BUSN 6610 (6810). Restriction: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Cross-listed with BUSN 6800. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **ISMG 6470 - Text Data Analytics**

This course includes two topics. The first topic covers algorithms and tools to perform quantitative analysis of unstructured text data. Concepts and algorithms that will be introduced in the class include Zipf's Law, Power Law Distribution, Pattern Discovery (using algorithms of Entropy, Inverse Document Frequency, Clustering etc.), and Machine Learning etc. SAS

Enterprise Miner/Text Miner will be introduced as a practice tool to carry out quantitative analysis of unstructured text data. By using the SAS Text Analytics software, students will learn the skills to uncover underlying themes and concepts contained in a large text document corpus. The second topic covers seminal theories and practical methods necessary to perform qualitative analyses of text data. Many qualitative research methods using text data (e.g., grounded theory, ethnographic study, case study etc.) will be introduced. NVivo 11 software will be used as a practice tool to conduct qualitative analyses of text data. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6480 - Data Warehouse and Administration**

Management of large, complex data warehouses and operational databases involves technical skills and background needed by information systems professionals as well as tactical and strategic issues faced by information technology managers. This course provides conceptual knowledge, practical skills, and policy background for prospective information systems professionals and information technology managers. The course covers business aspects, conceptual background, and product material about management of data warehouses and operational databases. Assignments and projects involve Oracle skills for database administration and tactical or strategic issues faced by information technology management. Prereq: ISMG 6080. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6510 - Accounting and Information Systems Processes and Controls**

Designed to develop knowledge and skills used to understand and evaluate corporate accounting processes and systems. Focuses on financial and information system internal controls and the flow of corporate information through an accounting system. A financial system objective and risk assessment approach issued to present concepts and techniques for evaluating the adequacy of system processes and controls. Cross-listed with ACCT 6510, 4780 and ISMG 4780. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6800 - Special Topics**

A variety of advanced topics are offered in this course. Past topics include the human-computer interface, software engineering, artificial intelligence, graphical user interface, project management and electronic commerce. Consult the current 'Schedule Planner' for semester offerings. Note: Seldom offered. Restrictions: Restricted to graduate majors and NDGR majors

with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Repeatable. Max hours: 15 Credits. **Semester Hours:** 3 to 3

### **ISMG 6810 - Business Intelligence in Healthcare**

Provides students with an overview of how business intelligence is used in the healthcare industry. Students study the evolution of IT in healthcare including digitization of electronic health records and systems integration. Next the course looks at healthcare transformation and the evolution of business intelligence in general. Using case studies and hands on exercises, students learn about different aspects of business intelligence in various subsets of the healthcare industry. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6820 - Business Intelligence and Financial Modeling**

This course will introduce students to the application of business intelligence in a corporate finance setting. Financial data intelligence is essential for effective decision making throughout the firm, in finance directly and in other functions supported by the finance department. Strategy setting, budgeting, and new product development are just a few decision areas where finance personnel play an active role. In this course, we learn how to apply business intelligence software tools to enable finance personnel to access and analyze corporate data in support of critical decision making across the enterprise. Students will also analyze data through the use of financial models built in Microsoft Excel. The development of complex financial models will provide students with valuable hands-on experience with a software tool used widely incorporate finance departments. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6830 - IT Governance and Service Management**

Deals with interrelated decisions on clarifying the business role of IT, defining integration and standardization requirements for the IT architecture, shared and enabling services for the IT infrastructure and business need for SaaS, and governance of cloud computing, IT outsourcing, and other IT services. Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6840 - Independent Study: ISMG**

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 8

### **ISMG 6850 - Securing the Enterprise**

This course provides the knowledge required to analyze the current enterprise environment in order to prepare a risk mitigation for security vulnerabilities encountered. Topics include principles and concepts; threats, vulnerabilities, risks, attacks and controls; risk process and management; and enterprise security policies. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6855 - Protecting the Enterprise**

This course examines methods and techniques used to secure an enterprise's environment. Topics include threat prioritization and mitigation; social engineering and security policies; encryption and cryptography; virtual private networks, wireless and mobile device management; antivirus, intrusion detection and protection systems; and firewalls and proxy servers. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6860 - Ethical Hacking Concepts and Methodologies**

From a technical perspective, organizations need to know how hackers work so that they can build their security around it and take preemptive measures against future attacks. The goal of the ethical hacking is to understand current exploits, and assess weaknesses and vulnerabilities of various organizational information systems by attacking them within legal limits. This course is designed to provide students an insight of current hacking tools and techniques used by hackers and security professionals to break into any computer systems. Throughout the course, students will engage in offensive and defensive hands-on exercises stressing ethical hacking and penetration testing that will be conducted in a vendor-neutral virtual environment. Topics include security threats and attack vectors, footprinting and reconnaissance, network scanning and enumeration techniques, vulnerability assessment, system hacking, malware threat analysis, social engineering, attack and defense strategies in emerging technologies. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6865 - Digital Forensic Analysis**

This is an introductory course in collecting, examining, and preserving evidence involving digital devices. This course examines the issues, tools, and control techniques needed to successfully investigate illegal or malicious activities facilitated through the use of information technology. The tools of collecting, examining, and evaluating data in an effort to establish intent, culpability, motive, means, methods, and loss resulting from these crimes will be examined. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6870 - Securing Information Assets**

This course concentrates on the identification of information assets and the techniques used to protect them from unauthorized access. Topics include laptops, desktop and server vulnerabilities; network vulnerabilities; extranet and intranet management; incident response and management; web site and web services management; virtualization in the data center; and cloud computing security. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6875 - Protecting Information Assets**

This course illustrates how information assets can be subjected to internal and external attacks and presents techniques used to secure them from unauthorized access. Topics include sub-networking for guest and vendor access; managing mixed operating system environments; data at rest and data in-transit; database inference; network management systems and security; information assurance tools and techniques. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6880 - Intrusion Detection and Incident Response**

A topic of increasing importance and interest in the world of information systems and business is malicious intruder detection and the response procedures required to secure business systems once an intrusion has occurred. It is critical that the organizations dependent on information technology have incident handling procedures when computer intrusions occur. By having proper incident response procedures, organizations can quickly recover from intrusions and where feasible bring perpetrators to justice. This course will provide the student the opportunity to learn about the elements that comprise Intrusion Detection and Incident Response. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA



within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6885 - Ethics: A Formula for Success**

Students will learn how to spot and address red flags that foster unethical behavior in both publicly-traded and privately-held businesses. Governance and stakeholder management techniques that incentivize ethical behavior will be highlighted using examples of companies that are financially successful by "doing the right thing." Principle-based ethics are emphasized, namely, integrity, trust, accountability, transparency, fairness, respect, viability, and compliance with the rule of law. Cross-listed with MGMT 3420, MGMT 6420, ISMG 4785. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6890 - IT Risk Management**

This course provides an overview of IT risk management practices. Students will learn the elements of risk management and the data necessary for performing an effective risk assessment. Various risk management models will be introduced to demonstrate the methods that can be implemented to achieve Confidentiality, Integrity, and Availability of information systems. This class uses hands-on labs to give students real-world practice utilizing Security Information and Event Management (SIEM) software to gain an understanding of how to detect and respond to a cyber threat. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6895 - Digital Forensic Analysis II**

This course examines advanced digital forensic analysis topics, tools, techniques, and control mechanisms. Advanced topics include operating system artifacts, anti-forensics, mobile and embedded devices, and volatile memory forensics. Students will gain experience with state-of-the-art forensics tools and techniques needed to successfully investigate illegal activities perpetuated through the use of information technology. Prereq: ISMG 6860 and ISMG 6865. Restriction: Restricted to Graduate Business School students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6910 - Design Science Practicum**

This is designed to be one of the final courses in the MS Information Systems degree. "Design Thinking" with user-centered perspectives will serve as a guiding principle to challenge assumptions and refine business problems to perform the final project. The instructor will provide students with tools and methods to identify, define and solve problems. Active discussion and creative presentation are core activities of this capstone course. Students will integrate what they have learned into a final project that can be either real-world problem

designed in collaboration with an organization or a research paper on an emerging topic in the field. The final project will have multiple deliverables including a paper and a professional presentation to stakeholders who are directly related with the business problems defined in the project. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 6950 - Master's Thesis**

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

### **ISMG 7001 - AI-Based Decision Making**

Introduces decision making concepts. It covers a range of approaches, techniques and tools for decision aiding and describes how they can be used to support decision processes. The topics include human decision making, decision support systems, knowledge-based systems, and AI methods that support decision making, like machine learning, Bayesian networks and association rules. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 7002 - Computer Security**

A broad overview of computer security, roughly divided into three unequal components: a) the history of codes and ciphers; b) basic cryptographic techniques, for example, symmetric cryptography, authentication techniques, and asymmetric cryptosystems, and: c) applications to current and future computer-related technologies, for example, network security, wireless communication, quantum cryptography, and more. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7002. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 7200 - Advances In Management Information Systems**

Provides an introduction to research methodologies engaged in Management Information System Research, including measurement, sampling, survey research, experiments, quasi-experiments and some qualitative research methods. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7200. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 7208 - Philosophy of Information Systems Research**

This course surveys the philosophical foundations that underlie the development of IS theories, research methods and measurements. The focus is placed on intensive and rigorous readings and critiques of key literature at the intersection of philosophy, sociology, history and information systems. Upon the completion of this course, students are expected to have enhanced capabilities to discern the ontological and epistemological boundaries of various IS theories and research methods so that they can carry out IS research with informed knowledge. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 7210 - Topics In Analytical Research In Management Information Systems**

Provides a detailed coverage of selected analytical research in information systems. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7210. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 7211 - Topics In Behavioral and Organizational Research In Management Information Systems**

Provides a detailed coverage of selected behavioral and organizational research in information systems. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7211. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 7212 - Strategic and Organizational Research in IS**

This course examines concepts in information technology with an emphasis on organizations, organizational strategy, and competitive advantage. Using a seminar method, students will be introduced to foundational concepts and current knowledge in the IT-based research areas of information and organizational economics, boundaries and markets, firm performance, organizational capabilities, innovation, organizational design and management mechanisms, and the challenges to achieving competitive advantage over competitors. Through completion of this course, students should acquire the ability to evaluate organization-focused IT research and identify valued questions that can be examined in future research. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 7214 - Mixed Methods Research**

This course focuses on techniques for designing and executing mixed methods research in information systems area. Students will review the philosophical foundations of both qualitative and quantitative foundation. Basic practice, effective use and avoidance of pitfalls in

mixed methods approach will be discussed. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 7220 - Research methods: Design and Analysis**

Research methods: Design and Analysis. Topics include: research design, approaches to gathering data; sampling methods; linear multivariate analysis methods emphasizing structural equations models; and a brief survey of other methods such as cluster analysis, multidimensional scaling, methods such as neural nets, CART and/or genetic algorithms. While much of the material is of general interest, the course emphasizes methods and situations to prepare students in the CS/IS Ph.D. program for research in their field(s). The course includes student projects involving the analysis of data using appropriate software, whose results are presented to the class. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with DSCI 6220. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 7551 - Parallel and Distributed Systems**

Examines a range of topics involving parallel and distributed systems to improve computational performance. Topics include parallel and distributed programming languages, architectures, networks, algorithms and applications. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7551. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 7552 - Advanced Topics in Parallel Processing**

Examines the advances of sequential computers for gaining speed and application of these techniques to high-speed supercomputers of today. Programming methodologies of distributed and shared memory multiprocessors, vector processors and systolic arrays are compared. Performance analysis methods for architectures and programs are described. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7552. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMG 7574 - Advanced Topics in Operating Systems**

Covers the advanced topics in operating systems by examining functionality and performance issues in CPU Scheduling, communications, distributed file systems, distributed operating systems, shared-memory multiprocessors and real-time operating systems. In addition to studying papers, reviews, and presentations, students carry out a semester long team project within the scope of one of the above topics. Prereqs: CSCI 3453 or CSCI 5573. Cross-listed with CSCI 7574. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ISMG 7582 - Artificial Intelligence**

Approaches to design of systems for solving problems usually solved by humans, especially those related to intelligent decision making. Emphasis on various types of knowledge representation. Cross-listed with CSCI 7582. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ISMG 7654 - Algorithms For Communication Networks**

Algorithmic and mathematical underpinnings of communication networks. A taxonomy of data-packet networks depending on modes of communication: Fixed-Interconnection networks, radio networks and multiple-access channel. Algorithms to implement packet routing, broadcasting and conflict resolution. Prereq: CSCI 5451. Cross-listed with CSCI 7654. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ISMG 7765 - Computer Networks**

An in-depth study of active research topics in computer networks. Topics include: Internet protocols, TCP/UDP, congestion and flow control, IP routings, mobile IP, P2P overlay networks, network security, performance, and other current research topics. Prereq: Graduate Standing. Cross-listed with CSCI 7765. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ISMG 7799 - Topics in Network Computing**

Studies the active research topics in network based computing such as Cluster, Grid computing, P2P Computing, Pervasive Computing. Workflow system and Cloud Computing. Students will study key papers in the literature, and submit a research term project. Prereq: Graduate Standing. Cross-listed with CSCI 7799. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ISMG 7800 - Special Topics**

A variety of advanced topics are offered at the Ph.D. level in this course. Consult the current 'Schedule Planner' for semester offering. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **ISMG 7840 - Independent Study: Pre-Dissertation Research**

Conduct pre-dissertation research under the supervision of a faculty member. Prereq: BUSN 6530. Repeatable. Max Hours: 18 Credits. **Semester Hours:** 1 to 9

## **ISMG 8990 - Dissertation Development**

Supports development of a dissertation in conjunction with a student's advisor. Prereq: Completion of first year and second year papers (ISMG 7840). Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering,

Design and Computing, PHCS PhD majors and PhD majors. Repeatable. Max hours: 15 Credits.  
**Semester Hours:** 1 to 15

## **Instructional Technology**

### **INTE 2500 - Digital Media and Learning**

Digital media have transformed where, how, and why people learn. This course examines theoretical foundations and contemporary developments in digital media and learning. Students will analyze, design, and enact projects exemplifying topics such as civic media, game-based and mobile learning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 4000 - Design Thinking and Educational Innovation**

Design thinking is a creative, human-centered approach to exploring and solving professional and community-based problems of practice. In this studio-based course students will cultivate academic and community partnerships, design innovative media and experiences, and support diverse learning opportunities across settings. Cross-listed with INTE 5000. Restriction: Restricted to undergraduate students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 4300 - Media Literacy**

In this course students learn to create, use, extend, and evaluate media products to support decision-making and real world problem-solving. Students also become more aware of the significant role of mass media, popular culture, and digital media in our lives. Cross listed with INTE 5300. Restriction: Restricted to undergraduate students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 4320 - Games and Learning**

This course examines the use of games for learning and education across formal and informal environments. Students will survey contemporary learning theory, media, trends, and challenges related to designing and playing games in informal, community-based, online, and school settings. Cross listed with INTE 5320. Restriction: Restricted to undergraduate students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 4340 - Learning with Digital Stories**

This course reviews the uses of digital storytelling for learning. Develop and publish a short digital story that tells something important about you and your interests. Explore ways that creating or using digital stories can aid learning and personal growth. Cross-listed with INTE 5340. Restriction: Restricted to undergraduate students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **INTE 4665 - Learning with Social Media and Networking**

The focus of this course is on how educators leverage networked social tools, technologies, and environments to address educational needs, opportunities, and problems of practice; and establish and nurture their own professional learning through participation in digital cultures. Cross-listed with INTE 5665. Restriction: Restricted to undergraduate students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **INTE 4680 - Producing Media for Learning**

Students develop and integrate media resources into eLearning environments, applying principles of media selection and multimedia learning. Students explore a variety of tools for producing audio, video, and multimedia content and examine ways to enhance eLearning courses through multimedia presentation and engagement resources. Cross-listed with INTE 5680. Max hours: 3 Credit Hours. **Semester Hours:** 3 to 3

## **INTE 4711 - Creative Designs for Instructional Materials**

This course is a project-based exploration of design theories, principles, and best practices for communicating information to diverse learning audiences. Students apply unique design approaches and formats to the creation of materials for teaching, learning, and being of service to underrepresented communities. Cross-listed with INTE 5711. Restriction: Restricted to undergraduate students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **INTE 5000 - Design Thinking and Educational Innovation**

Design thinking is a creative, human-centered approach to exploring and solving professional and community-based problems of practice. In this studio-based course students will cultivate academic and community partnerships, design innovative media and experiences, and support diverse learning opportunities across settings. Cross-listed with INTE 4000. Restriction: Restricted to graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **INTE 5100 - Planning and Designing for Instruction**

Instructional design is the process used to analyze, design, develop, and evaluate learning solutions. You will identify a gap in learning or performance and design a learning solution in the form of courses units, modules, and other instructional resources. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **INTE 5150 - Engaging in Education Advocacy**

This course will look at the theoretical foundations and critical issues of advocacy, elements of advocacy planning, and strategies for action. You will deepen your understanding of advocacy tools, processes and models in an effort to help you imagine how to utilize advocacy in your

own practice. A primary focus will be on the connection of community organizations and schools. Cross-listed with INTE 7150. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 5200 - Crafting eLearning Experience**

This course helps educators transition to teaching online. Create online learning activities, assessments, and resources. Learn how to establish a strong online teaching presence. Explore blended learning environments, use of set curriculum, open educational resources (OER), family support, communication strategies, digital citizenship, and accessibility concerns. Restriction: Restricted to graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 5250 - Teaching Strategies for Online and Blended Learning**

This course provides a foundation for effective online teaching strategies. Learning essentials include: affording more reflective, engaging, inventive, and successful online learning experiences; fostering improved presence; employing skilled management techniques; and unpacking tools, habits, and processes for effective learning. Restriction: Restricted to graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 5300 - Media Literacy**

In this course students learn to create, use, extend, and evaluate media products to support decision-making and real world problem-solving. Students also become more aware of the significant role of mass media, popular culture, and digital media in our lives. Cross listed with INTE 4300. Restriction: Restricted to graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 5320 - Games and Learning**

This course examines the use of games for learning and education across formal and informal environments. Students will survey contemporary learning theory, media, trends, and challenges related to designing and playing games in informal, community-based, online, and school settings. Cross listed with INTE 4320. Restriction: Restricted to graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 5340 - Learning with Digital Stories**

This course reviews the uses of digital storytelling for learning. Develop and publish a short digital story that tells something important about you and your interests. Explore ways that creating or using digital stories can aid learning and personal growth. Cross-listed with INTE 4340. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 5660 - Developing Self-Paced Online Modules**



Students use a variety of tools and strategies to develop self-paced eLearning courseware, such as tutorials. The course covers critical aspects of the instructional development process that support the creation of effective self-paced online learning experiences, materials and resources. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 5665 - Learning with Social Media and Networking**

The focus of this course is on how educators leverage networked social tools, technologies, and environments to address educational needs, opportunities, and problems of practice; and establish and nurture their own professional learning through participation in digital cultures. Cross-listed with INTE 4665. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 5670 - Creating Synchronous eLearning Experiences**

Webinars and other live online events are an increasingly popular approach to the delivery of learning and professional development opportunities. Informed by theory and research, students plan for and facilitate live learning events delivered via synchronous online technologies. Restriction: Restricted to graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 5680 - Producing Media for Learning**

Students develop and integrate media resources into eLearning environments, applying principles of media selection and multimedia learning. Students explore a variety of tools for producing audio, video, and multimedia content and examine ways to enhance eLearning courses through multimedia presentation and engagement resources. Cross-listed with INTE 4680. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 5711 - Creative Designs for Instructional Materials**

This course is a project-based exploration of design theories, principles, and best practices for communicating information to diverse learning audiences. Students apply unique design approaches and formats to the creation of materials for teaching, learning, and being of service to underrepresented communities. Cross-listed with INTE 4711. Restriction: Graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 5830 - Workshop: Learning Technologies**

Specific titles vary depending upon the specific skill areas within learning technologies. Restriction: Restricted to graduate level students. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 0.5 to 4

### **INTE 5840 - Independent Study: Learning Technologies**

Restriction: Restricted to graduate level students. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 4

### **INTE 5990 - Special Topics: Learning Technologies**

Restriction: Restricted to graduate level students. Repeatable. Max Hours: 30 Credits. **Semester Hours:** 1 to 6

### **INTE 5998 - Professional Development Activities**

Provides guidance for professional development through participation in appropriate state, regional, and national conferences. Meet and engage with leaders in the field while upgrading professional knowledge and skills. Restriction: Restricted to graduate level students. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 1 to 2

### **INTE 6720 - Research in Learning Design and Technology**

Analysis, evaluation, and production of research in instructional technology. Methods for observing instruction, assessing learning, and collecting participants reports to improve instruction. Development of recommendations for action based on research findings. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 6750 - Trends and Issues in Learning Design and Technology**

This course examines definitions, history, core concepts, and current trends and issues related to the practice of instructional technology. Topics include instructional systems design, theories of learning and instruction, change management, performance improvement, emerging technologies, equity and access, and mobile learning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTE 6840 - Independent Study: Learning Technologies**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 4

### **INTE 6930 - Internship: Learning Technologies**

Placement in a business, school or field setting where professional skills are applied to assess needs, design, develop and evaluate an instructional system, and provide leadership for change. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 3

## **INTE 6999 - Leadership for Technology Innovation**

This course examines principles and strategies for leadership in a school, library, district, or organization aiming to improve its use of educational technology. Course learning essentials include how to: deal with competing voices; promote organizational change; assess and analyze technology use; pursue continuous improvement; employ strategic planning practices; implement effective programs; ensure sound professional development; wrestle with pressing leadership challenges; and secure funding (grant writing). Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **INTE 7100 - Professional Learning and Technology**

Examines research surrounding the design and delivery of professional development (PD) programs in K20 and workplace settings. Projects and activities address: adult learning; PD models; design and; performance support and evaluation; career development and digital presence; and online tools. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **INTE 7110 - Mentoring, Coaching and Training**

In this course students examine research surrounding the design and delivery of professional learning (PL) programs in K20 and workplace settings. Projects and activities address: adult learning; PL models; design and; performance support and evaluation; career development and digital presence; and online tools. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **INTE 7130 - Professional Learning: Perspectives and Practices**

In this course students develop and evaluate large-scale learning initiatives in K20 and workplace settings. Topics include: frameworks for evaluating job performance based on professional learning standards; planning, delivering, and evaluating professional learning initiatives; research models; and performance improvement tools and resources. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **INTE 7150 - Engaging in Education Advocacy**

This course will look at the theoretical foundations and critical issues of advocacy, elements of advocacy planning, and strategies for action. You will deepen your understanding of advocacy tools, processes and models in an effort to help you imagine how to utilize advocacy in your own practice. A primary focus will be on the connection of community organizations and schools. Cross-listed with INTE 5150. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **INTE 7930 - Internship: Professional Learning**

Working under the direction of field and academic supervisors in field settings, contribute to projects intended to help educators and other workers improve their job performance. Apply

your knowledge to complex problems of practice, thus preparing for ongoing leadership opportunities. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Interdisciplinary Arts**

### **ARTS 1000 - Arts In Our Time**

Multidisciplinary course designed to introduce students to the ways in which arts work and how the arts shape our perception of the world around us. Each student selects three four-week modules designed to examine each of the disciplines of fine arts, music and theatre, in the context of the creative process, audience perception and historical perspective. Every five weeks, students from each of the modules join forces in a week of "Inter-arts" sessions -- lectures and discussions about the relationship of the arts to each other and to our contemporary culture. Topics which are addressed in the modules include such things as American musical theatre, perception of jazz, public sculpture, light as art, sonic explorations, photography, history of production design, women in American music and censorship. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARTS 1111 - First-Year Seminar**

The course explores the nature of creative inspiration, its potential and implementation. Through individual and collaborative projects, students investigate the interdisciplinary composition and development of the literary, visual and performing arts and their aesthetic, social and political impact. Restriction: Restricted to Freshman level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARTS 1150 - Topics in Cross-Disciplinary Arts I**

Designed to explore the ways in which the arts are a part of daily life. Research and observation of the variety of ways in which the arts are utilized. Prepares students to participate in special projects. Specific topics and projects change each semester. Repeatable. Max hours: 9 Credits. **Semester Hours:** 1 to 3

### **ARTS 1400 - The Horror Film**

This course is an analysis of the horror film genre and its significance as a reflection on society. It will look at both the history and development of this genre and the impact these films have had. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARTS 1500 - The Art and Entertainment Industry**

This multidisciplinary course presents a structural overview of multiple arts and entertainment industries. It examines macro themes of intellectual property, audience development and artist development. The course focuses on specific sectors such as the film, music, art, broadcasting,

video gaming and the internet, and the art/museum sector. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARTS 1700 - CMTC Topics in Transdisciplinary Practice**

Specialized topics are investigated via future- and professionally-focused curricula that utilize transdisciplinary collaboration, creativity and innovative approaches to real-world problems. Repeatable. Max hours: 9 Credits. **Semester Hours:** 1 to 6

### **ARTS 2150 - Topics in Cross-Disciplinary Arts II**

Provides opportunities for students to apply artists' methods and media in a non-presentation setting. Experiential research is centered around a specific topic each semester, but enable students to discover a broader understanding of the arts. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ARTS 2700 - CMTC Topics in Transdisciplinary Practice**

Specialized topics are investigated via future- and professionally-focused curricula that utilize transdisciplinary collaboration, creativity and innovative approaches to real-world problems. Repeatable. Max hours: 9 Credits. **Semester Hours:** 1 to 6

### **ARTS 3150 - Topics in Cross-Disciplinary Arts III**

Focuses on the ways in which the arts are engaged in communities as expressions of identity as well as agents of change. Historical research and applied projects provide a foundation for participation in designated team projects. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ARTS 3400 - World Cinema**

This course will examine representative examples of films from around the world to understand the current interests and concerns of world cinema, as well as to learn what concerns various countries around the world, and how those concerns are expressed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ARTS 3700 - CMTC Topics in Transdisciplinary Practice**

Specialized topics are investigated via future- and professionally-focused curricula that utilize transdisciplinary collaboration, creativity and innovative approaches to real-world problems. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **ARTS 4150 - Topics in Cross-Disciplinary Arts IV**

Investigates the historical and critical perspectives of the arts in a variety of contexts. Specific topics provide a focus for students to discover the ways in which the arts inform each other and are shaped by the events of the world. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ARTS 4700 - CMTC Topics in Transdisciplinary Practice**

Specialized topics are investigated via future- and professionally-focused curricula that utilize transdisciplinary collaboration, creativity and innovative approaches to real-world problems. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **ARTS 4939 - Internship**

Students build professional skills and increase their understanding of creative industries through experiential learning and course work designed to expand internship experiences into powerful learning. Assigned readings, group discussions, weekly summaries, and final paper/presentation support and reflect internship activities and build interpersonal, organizational, and industry specific skills while increasing knowledge of business practices and professionalism. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ARTS 5000 - Topics**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **ARTS 5150 - Topics In Cross-Disciplinary Arts**

Investigates the historical and critical perspectives of the arts in a variety of contexts. Specific topics provide a focus for students to discover the ways in which the arts inform each other and are shaped by the events of the world. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ARTS 5700 - CMTC Topics in Transdisciplinary Practice**

Specialized topics are investigated via future- and professionally-focused curricula that utilize transdisciplinary collaboration, creativity and innovative approaches to real-world problems. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **Interdisciplinary Major Course**

### **ISMA 1500 - Introduction to Interdisciplinary Learning**

This course introduces the theories, methodologies, and practices of interdisciplinary studies through a specific theme that will focus on how to learn in an online environment and how

interdisciplinary scholars combine the theories and methods of a variety of fields. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMA 2840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Repeatable. Max Hours: 3 Credits.

**Semester Hours:** 1 to 3

### **ISMA 3100 - Learning Across Disciplines**

Examining a compelling issue, students will learn what kinds of questions require thinking beyond a single discipline, how interdisciplinary scholars combine a variety of fields, and how to approach the challenges of interdisciplinary writing. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMA 3500 - Interdisciplinary Experiential Learning**

In this course, students will use the knowledge from their chosen clusters to bear on an experiential opportunity. Choosing an internship, community-based project, or job extension, students will collaborate with peers to design projects in this highly student-driven course. Prereq: ISMA 1500 with a C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMA 3840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **ISMA 3939 - Internship**

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: Students must have junior standing and at least a 2.75 GPA and must work with Experiential Learning Center advising to complete a course contract and gain approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **ISMA 4500 - Interdisciplinary Learning Capstone**

This course brings together students who have been working on individualized majors to share a capstone experience. The goal is for students to integrate knowledge from their cluster and

apply it to a project relevant to their field of interest. Prereq: ISMA 3500 with a C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **ISMA 4840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Repeatable. Max Hours: 3 Credits.

**Semester Hours:** 1 to 3

### **ISMA 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester**

**Hours:** 1 to 6

### **ISMA 4900 - Interdisciplinary Studies Capstone**

While working with their Primary Faculty Advisors on their capstone projects, students meet to discuss their experiences and to get feedback from each other as their projects develop. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **Interdisciplinary Studies**

#### **IDST 4000 - Special Topics**

Cross-listed with IDST 5000. Note: May be taken more than once for credit when topics vary. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

#### **IDST 4010 - Foundations of STEM Communication**

This course will provide students with an introduction to STEM communication and offer opportunities for developing STEM content for a variety of audiences across multiple formats. These formats span written, oral, digital, and social media communication. Through classroom exercises and assignments, students will understand the role of communication in shaping perceptions, knowledge, decisions and ultimately realities vis-a-vis STEM. They will also learn to provide critical analysis of popular mainstream STEM communication and be able to identify basic expectations and constraints of STEM communication across audience and context. The class will explore approaches to communicating concepts in STEM disciplines to a variety of audiences through practice. Ultimately, the students will develop the skills and resources



necessary to enable effective communication of complex STEM ideas to a wide range of audiences. Note: Students may not earn credit if they have already received credit for IDST topics courses with a similar title. Suggested background: Students are recommended to have completed at least one undergraduate sequence in a STEM discipline before enrolling in this course. Cross-listed with IDST 5010. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IDST 5000 - Special Topics**

Cross-listed with IDST 4000. Note: May be taken more than once for credit when topics vary. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **IDST 5010 - Foundations of STEM Communication**

This course will provide students with an introduction to STEM communication and offer opportunities for developing STEM content for a variety of audiences across multiple formats. These formats span written, oral, digital, and social media communication. Through classroom exercises and assignments, students will understand the role of communication in shaping perceptions, knowledge, decisions and ultimately realities vis-a-vis STEM. They will also learn to provide critical analysis of popular mainstream STEM communication and be able to identify basic expectations and constraints of STEM communication across audience and context. The class will explore approaches to communicating concepts in STEM disciplines to a variety of audiences through practice. Ultimately, the students will develop the skills and resources necessary to enable effective communication of complex STEM ideas to a wide range of audiences. Note: Students may not earn credit if they have already received credit for IDST topics courses with a similar title. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with IDST 4010. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **International Business**

#### **INTB 1111 - International Social Entrepreneurship**

The end of the 20th Century saw the rise of a powerful new force: the International Social Entrepreneur. Leveraging the power of market forces, social media, the internet, and the desire to make the world better, these people have developed powerful ways to tackle the social, economic, and environmental problems that confront us all. In this class, we will study the rise of international social entrepreneurship, and the innovative tools international social entrepreneurs have developed to address some of our most dire challenges. Restriction: Restricted to Freshman level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **INTB 2939 - Internshp**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **INTB 3000 - Global Perspectives**

Globalization brings both opportunities and anxieties that need to be fully explored, discussed and understood both by the business and non-business student. This interdisciplinary course is designed to stimulate thought, perspective, discussion and debate for business and non-business students on issues ranging from globalization; political economy and geopolitics; the environment; cultures; finances; economic integration; trade; global regions; emerging markets; human rights; terrorism and conflict; leadership, ethics and values; entrepreneurship, to future trends in global issues. The Global Perspective course is designed (1) to increase and promote both business and non-business students' capacity for international understanding and international enterprise through the study and discussion of global business environment-related issues from multiple points of views in a neutral forum. (2) It is to provide students with the awareness that global issues cannot be viewed in isolation, Restriction: Restricted to undergraduate majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 3939 - Internship**

Supervised experiences involving the application of concepts and skills in an employment situation. To enroll in an internship, students must work with the Experiential Learning Center on campus and have a 2.40 GPA or higher. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **INTB 4028 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Cross-listed with ENTP 4028, ENTP 6028, and INTB 6028. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 4200 - International Marketing**

Studies managerial marketing policies and practices of firms marketing their products in foreign countries. Analytical survey of institutions, functions, policies, and practices in international marketing. Relates marketing activities to market structure and environment. Cross-listed with MKTG 4200. Prereq: MKTG 3000 with a C or higher. Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 4370 - International Financial Management**

Financial management in the international environment. Topics include international capital movements; international operations as they affect the financial functions; foreign and

international institutions; and the foreign exchange process. Also considers foreign exchange theory and risk management, financial requirements, problems, sources, and policies of firms doing business internationally. Cross-listed with FNCE 4370. Prereq: FNCE 3000 with a C or higher. Restriction: Restricted to undergraduate Business majors at junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 4400 - Environments of International Business**

An overview of the environmental complexities that arise when business activities and firms cross national borders. Key international business environmental complexities associated with country differences, cross-border trade and investment, and global monetary system are examined. Prereq: MGMT 3000 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher and SPAN-BA majors with a SPP subplan at junior level. Cross-listed with MGMT 4400. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 4410 - Operations of International Business**

Focuses on the impact of environmental factors on international business operations and the identification and analysis of complex strategic and operational issues facing business firms in global markets. The strategies and structures of international businesses, alternative foreign market entry modes, and the unique roles of various business functions at international business firms are explained and assessed. Prereq: INTB 4400 or MGMT 4400 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Cross-listed with MGMT 4410. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 4840 - Independent Study**

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Restriction: Restricted to undergraduate business majors with junior standing or higher. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 8

### **INTB 4950 - Special Topics in International Business**

Current topics in international business are occasionally offered. Consult the 'Schedule Planner' for specific course offerings or contact an advisor for information. Prereq: Topics vary depending on the topic and the instructor requirements. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **INTB 5800 - Special Topics in International Business**

Current topics in international business are occasionally offered. Consult 'Schedule Planner' for specific course offerings or contact an advisor for information. Prereq: Topics vary depending on the topic and the instructor requirements. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **INTB 5939 - Internship**

Supervised experiences involving the application of concepts and skills in an employment situation. Prereq: 21 semester hours and a 3.5 grade-point average. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **INTB 6000 - Introduction to International Business**

This course examines the international business environment, its impact on business operations across borders, and the international dimensions of key business and managerial functions. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 6020 - Cross-Cultural Management**

Focuses on the management of diverse socio-cultural and political norms and values in the global marketplace. The goal of this course is to develop skills in managing impacts of such values and norms on the effectiveness of international business operations and managerial activities. Prereq: INTB 6000 or permission of instructor. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 6022 - International Business Negotiations**

Examines the international dimensions of business negotiations. It addresses the impact of the cultural, legal, political environments in the negotiation process, and examines similarities and differences in negotiation styles and approaches across borders. (This course qualifies as an international elective for the MS in International Business program.) Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 6024 - International Trade Finance and Management**

Provides an overview of international trade finance and trade management. It examines the roles played by various parties involved in international trade, addresses key methods of international payment and related financing, and provides practical experiences on how to manage the import and export trade management process. (This course qualifies as an international elective for the MS in International Business program.) Restriction: Restricted to

graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 6026 - Marketing Challenges at the Global Frontier**

Explores problems, practices, and strategies involved in marketing goods and services internationally. Emphasized analysis of uncontrollable environmental forces, including cultures, governments, legal systems, and economic conditions, as they affect international marketing planning. Emphasis on practice through the use of projects and speakers. Coreq: BUSN 6560. Instructor may waive coreq for business students. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD. Note: students cannot receive credit for both MKTG 6020 and INTB 6026. Cross-listed with MKTG 6020. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **INTB 6028 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Cross-listed with ENTP 4028, ENTP 6028, and INTB 4028. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **INTB 6030 - 11-Month MBA International Business Study Abroad**

The 11-Month MBA International Business Study Abroad is an experiential learning course conducted abroad. Available for 11-Month MBA students only. **Semester Hours:** 3 to 3

### **INTB 6040 - Managing Global Talent**

This course has two objectives: (1) to understand the impact of cultural differences in the management of people in multinational firms; and (2) to compare and contrast critical human resource issues in the contexts of domestic and international operations. Topics include recruitment, staffing, training, performance appraisal, compensation, and labor and management relations in markets around the world. (This course qualifies as an international elective for the MS in International Business program.) Prereq: BUSN 6520 or BUSN 6521 or MGMT 6380 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Cross-listed with MGMT 6040. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 6060 - The Legal Aspects of International Business**

Analyzes the legal aspects of international business transactions and considers risk-reducing mechanisms such as letters of credit and arbitration. The course examines NAFTA, the European union, and other international trading structures and rules, giving the background for

export or import activities. (This course qualifies as an international elective for the MS in International Business program.) Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 6082 - Marketing in Emerging Markets**

Explores problems, practices, and strategies involved in marketing goods and services in emerging markets. Emphasizes analysis of uncontrollable environmental forces, including cultures, governments, legal systems, and economic conditions, as they affect the marketing plan. (This course qualifies as an international elective for the MS in International Business program.) Prereq: BUSN 6560. Note: Students cannot receive credit for both MKTG 6080 and INTB 6082. Cross-listed with MKTG 6080. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 6094 - Marketing Issues in the Chinese Environment**

This course assesses numerous marketing and marketing related topics in the Chinese environment with the objective of helping the graduate student develop managerial and marketing expertise. In specific, the course pinpoints key developments in the Chinese business environment, develops expertise in conducting market opportunity analysis, assesses market entry conditions and strategies and applies marketing mix strategies in the context of the Chinese environment. Note: It is recommended for students to take BUSN 6560 or INTB 6000 prior to this course. Cross-listed with MKTG 6094. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 6200 - International Business Policy**

The objective of this course is to develop competence relevant to strategy formulation and implementation in a multi-national enterprise, and in an international context. Provides theoretical knowledge, skills, and sensitivities that help deal effectively with the strategic and managerial problems of managing in a global environment. Prereq: INTB 6000 or ENTP 6826. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 6370 - International Accounting**

Designed to expose students to the international aspects of accounting and financial management. Includes discussion of some of the different financial accounting practices across countries; financial statement analysis in a global context. IFRS's are reviewed and compared with the requirements of US GAAP. Note: Students cannot receive credit for both ACCT 6370 and INTB 6370. Prereq: BUSN 6550 or ACCT 6031. Cross-listed with ACCT 6370 and ACCT 4370. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 6372 - International Financial Management**

Addresses financial management in an international context that considers international capital movements and foreign exchange problems, and international operations as they affect financial functions. It reviews foreign and international institutions and the foreign exchange process and considers financial requirements, problems, sources, and policies of firms doing business internationally. Meets concurrently with FNCE 6370. Prereq: BUSN 6640. Cross-listed with FNCE 6370. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 6411 - International Corporate Governance**

Discusses the structure and goals of the modern corporation, the primary governance mechanisms used to help companies achieve these goals, how and why these roles, goals, and mechanisms vary across nations. The topics to be covered in the course include how share ownership, particularly by institutional shareholders, managerial compensation and board of director activities are being used to improve corporate governance systems. The class compares the Codes of Best Governance Practices from several countries as well as recent innovations in individual company governance rating systems. (This course qualifies as an international elective for the MS in International Business program.) Prereq: BUSN 6640. Note: Students cannot receive credit for both FNCE 6411 and INTB 6411. Cross-listed with FNCE 6411. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 6460 - Emerging Market Finance**

This course aims to explore key emerging market finance issues from the perspectives of corporations, investors and markets. Emerging economies are deemed to be the engine of growth opportunities in the world economy. However, compared with developed markets, they typically have some unique features in their economic systems and financial markets, and thus different risk and return characteristics, leading to special considerations of capital budgeting, financing and investing in these economies. This course is to help develop a better understanding of financial markets, corporate finance and investments in emerging economies, with case studies on some major emerging markets (e.g., China, India). Prereq: BUSN 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with FNCE 6460. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 6500 - International Business Consulting**

This action-learning course provides students the opportunity to work with and consult for a company at the senior executive level (e.g., CEO, Business Unit heads) in order to add value to the firm's international business. Students will apply international business principles and practices to address a strategic, functional, operational, or geographic opportunity facing a sponsoring organization. In addition, students will gain "on the job learning" of key protocols in an international business consulting context. Note: Because the topics change each term, student may take this course twice. Work with an advisor to make sure there is room in your

degree plan before enrolling in the second course. Repeatable. Max Hours: 6 Credits.

**Semester Hours:** 3 to 3

### **INTB 6730 - Supply Chain Analytics**

Introduces the design, analysis, management, and control of supply chains. Because of continuing advances in globalization, sustainability, and information technology, course emphasis will include integration of processes and systems, relationship management of upstream and downstream players, and strategies that incorporate current and future trends. Cross-listed with BANA 6730. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 6750 - Research Methods in International Business**

Focuses on three major issues: (1) research design from an international management perspective (e.g., qualitative, quantitative and ethnographic); (2) topical issues (e.g., culture, international negotiations, mergers and alliances); (3) trends in international business research (e.g., cross-national project teams, emerging theoretical perspectives). This course qualifies as an international elective for the MS in International Business program. Note: Available to students as Independent Study only. Prereq: INTB 6000 and BUSN 6530 or equivalent. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTB 6800 - Special Topics in International Business**

Current topics in international business are occasionally offered. This includes international field study courses. Consult the 'Schedule Planner' for specific course offerings or contact an advisor for information. (This course qualifies as an international elective for the MS in International Business program.) Prereq: Topics vary depending on topic and instructor requirements. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 3

### **INTB 6840 - Independent Study**

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. (This course qualifies as an international elective for the MS in International Business program.) Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 8

### **INTB 6870 - Global Climate Change**

Global climate change may be one of the most important challenges facing business in the 21st century. This course will introduce the potential impacts of climate, then discuss possible regulatory responses to and business risks and opportunities that may emerge if climate change occurs. Max hours: 3 Credits. **Semester Hours:** 3 to 3



## **INTB 6950 - Master's Thesis**

Prereq: INTB 6750. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

## **International Studies**

### **INTS 1111 - First Year Seminar**

Restriction: Restricted to Freshman level students. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTS 2020 - Foundations of International Studies**

Through a combination of lecture, discussion, and hands-on learning activities, students will develop skills and abilities necessary for academic and professional success in the international studies arena, especially critical thinking, connection building, conceptual understanding, and cultural awareness. The course is structured in three phases: (1) core interdisciplinary concepts; (2) regional foci; and (3) global issues. Note: Please add course note: Students may not receive credit for INTS 2020, if they have already received credit for INTS 2000. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTS 3939 - Internship**

Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: Students must have junior standing and at least a 2.75 GPA and must work with Experiential Learning Center advising to complete a course contract and gain approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **INTS 4611 - Rhetoric of Global Food Policy**

This course examines stakeholder relations, agendas, and debates about global food policy using rhetorical concepts and analysis. Topics include the framing of debates about agriculture, hunger and obesity, the greening of food governance, sustainable food systems, and more. This course fulfills the communication department's pathway course requirement. Cross-listed with COMM 4611. Prereq: Junior standing or higher. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTS 4700 - Special Topics**

Note: May be taken more than once for credit when topics vary. Term offered: fall, spring. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **INTS 4840 - Independent Study**

Directed study based on a specific subfield of international studies. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **INTS 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **INTS 4990 - International Studies Capstone**

A capstone course for students in the International Studies major, the class is designed to facilitate independent student research in the field of international studies and assist students in developing advanced writing and communication skills. Prereq: Students in the course must be declared international studies majors in their final year of coursework (senior status is recommended preparation). Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **INTS 4995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Cross-listed with INTS 5995. Term offered: summer. Repeatable. Max hours: 15 Credits. **Semester Hours:** 1 to 15

### **INTS 5995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Cross-listed with INTS 4995. Term offered: summer. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 1 to 15

### **inWorks Innovation Initiative**

### **IWKS 2100 - Human-Centered Design, Innovation and Prototyping**

Introduces collaborative interdisciplinary design and innovation from a human perspective. Using the wide array of Inworks prototyping facilities, teams of students will design and implement human-oriented projects of increasing scale and complexity, in the process acquiring essential innovation and problem-solving skills. Cross-listed with ARCH 3705. Prereq: none. Participants of all backgrounds are encouraged to register; no previous design or prototyping experience is required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 2300 - Computational Foundations of Innovation**

Introduces fundamental principles of computing related to innovation. Students learn to give objects interesting behaviors by writing simple programs. Class discussions and readings introduce important computing ideas and concepts. Prepares students for more advanced IWKS courses that require knowledge of computing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 3100 - 3D Design, Computation and Prototyping**

Introduces the design and computer-controlled fabrication of three-dimensional objects using both additive (3D printing) and subtractive (laser cutter, CNC router/mill) processes. Increasingly complex projects throughout the semester using various CAD/CAM software tools will explore design strategies for digital fabrication. Prerequisites: None; no previous design or prototyping experience is expected or required. Cross-listed with IWKS 5170 and ARCH 3706. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 3180 - Inworks: Choose Your Own Adventure: Experiences in Design, Innovation and Prototyping**

Provides weekly speakers, workshops and other experiences that educate and enrich across the design, innovation and prototyping landscape. Students may choose to participate in any five (for one credit), ten (for two credits) or fifteen (for three credits) activities. Each week, participating students will attend the scheduled activity, and then create a meaningful response that reflects the impact of that activity on their thinking or practice. Prerequisites: None. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **IWKS 3200 - Data Science for Innovators**

Introduces techniques for capturing, processing, visualizing, and making meaning out of large datasets. With the exponential growth and decreasing cost of data collection tools such as genome sequencing, social media, crowd sourced data, mobile phone apps, remote sensors, and data from other publically available sources, innovators are able to harness a rich array of data in their designs. This course will introduce the fundamentals of working with online data and large data sets, introduce widely used data analysis and visualization tools, and culminate in a cumulative project that incorporates data in a significant way. Suggested Background: IWKS 2300 or similar experience. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **IWKS 3300 - NAND to Tetris: Foundations of Computer Systems**

Introduces the principles of computer systems that underlie the global information age. Starting from first principles, students gradually construct a simple hardware platform and a modern software hierarchy, yielding a working basic yet powerful computer system. Only introductory programming experience is required. Suggested Background: IWKS 2300 or similar computing experience. Cross-listed with CSCI 2940. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **IWKS 3400 - Game Design and Development I**

Introduces principles of computer game development, building on the rich interplay of computer science, graphics design, physics, music, and narrative. Students develop interactive 2D and 3D games and a final project. Substantial software development involved, but requires only introductory programming experience. Suggested Background: IWKS 2300 or similar computing experience. Cross-listed with CSCI 2941. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **IWKS 3540 - Synthetic Biology for Innovators**

Introduces the fundamentals of synthetic biology for those who seek to use it as tool for innovation. Synthetic biology allows us to engineer new biological systems and redesign existing biological components by integrating aspects of biotechnology, evolutionary and molecular biology, systems biology, computer engineering, computational biology, and genetic engineering. Advancement in technological tools and techniques make this material accessible to motivated individuals from many disciplines, and no biology background is required. Culminates with a final team project focused on designing synthetic biology solutions that address human need. Suggested Background: None. No previous background in biology is required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **IWKS 3550 - Innovation Law and Policy**

Introduces legal and regulatory foundations related to innovation, including intellectual property, telecommunications, electronic commerce, the Internet, biotechnology, ethical and equity considerations, and financing. These issues are examined from the perspectives of the legal, business, capital, development, consumer, and policy-making communities. Suggested background: IWKS 2100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **IWKS 3600 - Innovating for the Developing World**

Explores the design and development of products and services that can be sustainably and gainfully used by the world's poorest citizens. Students in interdisciplinary teams will design, implement and evaluate viable solutions to a real problem faced by people in the developing world. The goal is to develop an understanding of the extraordinary challenges faced by

individuals for whom basic survival is not a given, and the knowledge and skills necessary to create designs that respond appropriately to those unique circumstances. Provides a foundation for further study and practice in the area of technology and development. Suggested Background: IWKS 2100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 3620 - Mobile App Development**

Introduces mobile application development, including front-end mobile application clients, data handling, connectivity to back-end services and cloud hosting. The course provides an overview and comparison of technical approaches employed by Apple iOS, Google Android, and cross-platform development environments. Students will install, develop, test, and distribute mobile applications while addressing challenges associated with development for any mobile platform: limited screen size and memory, gesture based GUI, varying connectivity, and the wide variety of target mobile devices. Suggested Background: IWKS 2300 or similar computing experience. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 3700 - Innovation and Society**

Analyzes impact of innovative design on work, sense of self and social systems, in education, healthcare, finance, and other sectors. Investigates how people customize / "hack" technologies they use, and the moral / ethical implications of being designers. Students will research the impact of an innovation of their choice and share via essays, models, videos, or another medium of their choice. Suggested Background: None. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 3850 - Product Design**

Explores the design requirements associated with creating a product that will be manufactured in large quantities and used by potentially thousands of users. These requirements are often very different from those associated with creating a working prototype. This gap between prototype creation and starting a business offers an interesting and unique set of design challenges. As part of the course, teams of students will engage in a realistic product design cycle. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 4100 - Advanced Human-Centered Design and Prototyping**

Explores user-centered design paradigm from a broad perspective, emphasizing how user research and prototype assessment can be integrated into different phases of the design process. Teams of students develop expertise in the design, development, and critique of solutions to important human problems. Suggested background: IWKS 2100 & 3100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 4120 - IoT: The Internet of Things**

In a world where everything is connected to everything else, how does that work? This course introduces techniques for (1) designing systems that can sense the environment and respond to humans in meaningful ways and (2) creating networks of physical objects that collect and exchange data. Such systems might include wearable sensors, interactive art, and Internet-connected home devices. Working individually and in teams, students will develop projects using Inworks' materials, devices, and fabrication tools. The course involves considerable prototyping and software development but requires only introductory programming and prototyping experience. Suggested Background: IWKS 2100 & 2300. Cross-listed with CSCI 2942. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 4450 - Game Design and Development II**

Continuation of IWKS 3400, with increased emphasis on more advanced techniques including 3D rendering; lighting simulation; vertex, pixel and geometry shaders; shadows; terrain building; bump, parallax, and parallax occlusion mapping; shading; ray tracing; bloom; and high dynamic range lighting. Suggested Background: IWKS 3400. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 4500 - Bio-Design and Innovation**

Introduces the biodesign innovation process, which involves identifying important human needs and inventing meaningful solutions to address them. The course examines how biotechnology and bio-inspired innovation improve the form and function of our design world through innovative materials and novel approaches to developing buildings, food, medicine, infrastructure and more. Readings and in-class debates will raise critical issues in contemporary bioethics. For their final projects, students will choose to create and prototype a speculative biodesign concept, or work in the bio lab on the development of a real-world biodesign solution of their choosing. Suggested Background: IWKS 2100 & 3100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 4520 - Design for Healthful Human Longevity**

Introduces contemporary studies, therapies, theories, and research on aging, age related disease, and innovations for longer healthier human lives. Guest lecturers, seminar discussions, readings and discussions will inform student projects that address challenges to prolonged, healthy, disease-free lives. Suggested Background: IWKS 2100 and 3700. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 4650 - Innovating for the Developing World**

Explores the design of products and services that can be sustainably used by the world's poorest citizens. Students design, implement and evaluate solutions to real problems in the developing world. Provides a foundation for further study and practice. Suggested Background: IWKS 3500 & 3600. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 4680 - Case Studies in Design**

Explores why some projects succeed and others fail. Many human-centered interventions fail to meet their designers' objectives, reflecting the unique challenges associated with matching human need with feasibility. Explores how innovators can increase their chances for success by examining several successful (and unsuccessful) designs. Suggested Background: IWKS 2100 & 3700. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 4700 - Unconventional Design for Online Learners**

Explores how design-thinking and user-centered design can be used to develop and improve technology-mediated learning. Using a team-based project-oriented approach, students design, develop, and evaluate new modalities for digital education. Projects include ways to educate both general and targeted audiences. Suggested Background: IWKS 3700. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 4800 - StartUp: Creating a New Venture from Scratch**

Teams of students are guided to create and launch a new company in a single semester. Culminates in a "pitchfest" to area entrepreneurs and venture capitalists. One of two alternative capstone courses for the Inworks Minor in Design and Innovation. Requires enrollment in the Inworks HCDI minor or certificate, or instructor permission. Suggested Background: Completion of at least three other Inworks courses. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **IWKS 4900 - Undergraduate Capstone**

Working closely with project sponsors, students design, implement, and evaluate a project for use in local industry and non-profit organizations. One of two alternative capstone courses for the Inworks Minor in Design and Innovation. Prereq: IWKS 2100 and enrollment in the Inworks HCDI minor or certificate. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **IWKS 4930 - Special Topics in Human Centered Design and Innovation**

Emergent issues and professional developments in design, innovation and prototyping. Consult the current online Inworks Course List for semester offerings as new special topics courses are frequently added. With permission, may be repeated for credit. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 4

### **IWKS 4970 - Independent Study in Human Centered Design and Innovation**

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to design, innovation and prototyping. With permission, may

be repeated for credit. Enrollment requires permission of an Inworks faculty member. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 4

### **IWKS 5100 - Human-Centered Design, Innovation and Prototyping**

Offers a graduate-level introduction to collaborative interdisciplinary design and innovation from a human perspective, as well as introducing key theoretical and computational foundations of innovation. Using the wide array of Inworks prototyping facilities, teams of students will design and implement human-oriented projects of increasing scale and complexity, in the process acquiring essential innovation and problem-solving skills.

Prerequisite: None. No previous design or prototyping experience is expected or required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 5120 - IoT: The Internet of Things**

In a world where everything is connected to everything else, how does that work? This course introduces techniques for (1) designing systems that can sense the environment and respond to humans in meaningful ways and (2) creating networks of physical objects that collect and exchange data. Such systems might include wearable sensors, interactive art, and Internet-connected home devices. Working individually and in teams, students will develop projects using Inworks' materials, devices, and fabrication tools. The course involves considerable prototyping and software development but requires only introductory programming and prototyping experience. Suggested Background: IWKS 5100 & some computing experience.

Restriction: Restricted to students with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 5150 - Advanced Human-Centered Design and Prototyping**

Graduate version of IWKS 4100. An advanced exploration of design thinking and the user-centered design paradigm from a broad range of perspectives, emphasizing how user research and prototype assessment can be integrated into different phases of the design process. Using a team-based, project-oriented approach, students will develop advanced expertise in the design, development, and critique of solutions to important human problems. The course will make full use of Inworks' prototyping facilities. Suggested Background: IWKS 5100 & 5170. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 5170 - 3D Design, Computation and Prototyping**

Introduces the design and computer-controlled fabrication of three-dimensional objects using both additive (3D printing) and subtractive (laser cutter, CNC router/mill) processes.

Increasingly complex projects throughout the semester using various CAD/CAM software tools will explore design strategies for digital fabrication. Restriction: Restricted to students with graduate standing. Cross-listed with IWKS 3100 and ARCH 3706. Max hours: 3 Credits.

**Semester Hours:** 3 to 3



## **IWKS 5180 - Inworks: Choose Your Own Adventure: Experiences in Design, Innovation and Prototyping**

Provides weekly speakers, workshops and other experiences that educate and enrich across the design, innovation and prototyping landscape. Students may choose to participate in any five (for one credit), ten (for two credits) or fifteen (for three credits) activities. Each week, participating students will attend the scheduled activity, and then create a meaningful response that reflects the impact of that activity on their thinking or practice. Prerequisites: None. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

## **IWKS 5200 - Data Science for Innovators**

Graduate version of IWKS 3200. Introduces techniques for capturing, processing, visualizing, and making meaning out of large datasets. With the exponential growth and decreasing cost of data collection tools such as genome sequencing, social media, crowd sourced data, mobile phone apps, remote sensors, and data from other publically available sources, innovators are able to harness a rich array of data in their designs. This course will introduce the fundamentals of working with online data and large data sets, introduce widely used data analysis and visualization tools, and culminate in a cumulative project that incorporates data in a significant way. Suggested Background: IWKS 5350 or similar computing experience. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **IWKS 5300 - NAND to Tetris: Foundations of Computer Systems**

Graduate version of IWKS 3300. Introduces the principles of computer systems that underlie the global information age. Starting from first principles, students gradually construct a simple hardware platform and a modern software hierarchy, yielding a working basic yet powerful computer system. Suggested Background: IWKS 2300 or similar computing experience. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **IWKS 5350 - Computational Foundations of Innovation**

Graduate version of IWKS 2300. Introduces the technological underpinnings of modern society, introducing the fundamental principles of computing. Students create realistic artifacts, and imbue those artifacts with interesting behavior by writing computer programs in on-line virtual world similar to Second Life and for simple Arduino-connected devices. In-class and in-world discussions and readings introduce important computing ideas and concepts. Completion of this course will prepare students for more advanced IWKS graduate courses that require knowledge of computing principles and practices. Prerequisites: None. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **IWKS 5400 - Game Design and Development I**

Graduate version of IWKS 3400. Introduces principles of computer game development, building on the rich interplay of computer science, graphics design, physics, music, and narrative. Students develop interactive 2D and 3D games and a final project. Substantial software development involved, but requires only introductory programming experience. Suggested Background: IWKS 2300 or similar computing experience. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 5450 - Game Design and Development II**

Graduate version of IWKS 4450. Continuation of IWKS 5400, with increased emphasis on more advanced techniques including 3D rendering; multimodal music, complex narrative, animation, non-player AI, and advanced 3D techniques including diffuse, ambient, specular, and emissive lighting; vertex, pixel and geometry shaders; shadows; terrain building; reflective and refractive lighting; bump, parallax, and parallax occlusion mapping; Phong and Gouraud shading; "cel" shading; ray tracing; bloom; and high dynamic range lighting. Suggested Background: IWKS 5400 or similar experience in game development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 5500 - Bio-Design and Innovation**

Introduces the biodesign innovation process, which involves identifying important human needs and inventing meaningful solutions to address them. The course examines how biotechnology and bio-inspired innovation improve the form and function of our design world through innovative materials and novel approaches to developing buildings, food, medicine, infrastructure and more. Readings and in-class debates will raise critical issues in contemporary bioethics. For their final projects, students will choose to create and prototype a speculative biodesign concept, or work in the bio lab on the development of a real-world biodesign solution of their choosing. Suggested Background: IWKS 2100 & 3100. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 5520 - Design for Healthful Human Longevity**

Graduate version of IWKS 4520. Introduces contemporary studies, therapies, theories, and research on aging, age related disease, and innovations for longer healthier human lives. Guest lecturers, seminar discussions, readings and discussions will inform student projects that address challenges to prolonged, healthy, disease-free lives. Suggested Background: IWKS 5100 and 5700. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 5540 - Synthetic Biology for Innovators**

Graduate version of IWKS 3540. Introduces the fundamentals of synthetic biology for those who seek to use it as tool for innovation. Synthetic biology allows us to engineer new biological systems and redesign existing biological components by integrating aspects of biotechnology,

evolutionary and molecular biology, systems biology, computer engineering, computational biology, and genetic engineering. Advancement in technological tools and techniques make this material accessible to motivated individuals from many disciplines, and no biology background is required. Culminates with a final team project focused on designing synthetic biology solutions that address human need. Suggested Background: None. No previous background in biology is required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 5550 - Innovation Law and Policy**

Graduate version of IWKS 3550. Introduces legal and regulatory foundations related to innovation, including intellectual property, telecommunications, electronic commerce, the Internet, biotechnology, ethical and equity considerations, and financing. These issues are examined from the perspectives of the legal, business, capital, development, consumer, and policy-making communities. Suggested Background: IWKS 5100. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **IWKS 5600 - Innovating for the Developing World**

Graduate version of IWKS 3600. Explores the design and development of products and services that can be sustainably and gainfully used by the world's poorest citizens. Students in interdisciplinary teams will design, implement and evaluate viable solutions to real problems faced by people in the developing world. The goal is to develop an understanding of the extraordinary challenges faced by individuals for whom basic survival is not a given, and the knowledge and skills necessary to create designs that respond appropriately to those unique circumstances. Provides a foundation for further study and practice in the area of technology and development. Suggested Background: IWKS 5100. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 5620 - Mobile App Development**

Graduate version of IWKS 3620. Introduces mobile application development, including front-end mobile application clients, data handling, connectivity to back-end services and cloud hosting. The course provides an overview and comparison of technical approaches employed by Apple iOS, Google Android, and cross-platform development environments. Students will install, develop, test, and distribute mobile applications while addressing challenges associated with development for any mobile platform: limited screen size and memory, gesture based GUI, varying connectivity, and the wide variety of target mobile devices. Suggested Background: IWKS 5100 & IWKS 5350 or similar computing experience. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 5650 - Innovating for the Developing World**

Explores the design of products and services that can be sustainably used by the world's poorest citizens. Students design, implement and evaluate solutions to real problems in the

developing world. Provides a foundation for further study and practice. Suggested Background: IWKS 5100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 5680 - Case Studies in Design**

Graduate version of IWKS 4680. Explores why some projects succeed and others fail. Many human-centered interventions fail to meet their designers' objectives, reflecting the unique challenges associated with matching human need with feasibility. Explores how innovators can increase their chances for success by examining several successful (and unsuccessful) designs. Suggested Background: IWKS 5100 & 5700. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 5700 - Innovation and Society**

Graduate version of IWKS 3700 Analyzes impact of innovative design on work, sense of self, and social systems, in education, healthcare, finance, and other sectors. Investigates how people customize / "hack" technologies they use, and the moral / ethical implications of being designers. Students will research the impact of an innovation of their choice and share via essays, models, videos, or another medium of their choice. Suggested Background: IWKS 5100. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 5750 - Critical Analysis of Design**

Graduate version of IWKS 3700. Examines technologies that pervade daily life. Analyzes impact of designs on work lives, sense of self, and social systems, within education, healthcare, finance, and other sectors. Investigates how technologies are customized and ethical implications of designing systems for others. Suggested Background: IWKS 5100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 5800 - StartUp: Creating New Ventures**

Teams of students are guided to create and launch a new company in a single semester. Culminates in a "pitchfest" to area entrepreneurs and venture capitalists. One of two alternative capstone courses for the Inworks Minor in Design and Innovation. Restriction: Requires enrollment in the Inworks HCDI minor or certificate, or instructor permission. Suggested Background: Completion of at least three other Inworks courses. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **IWKS 5850 - Product Design**

Graduate version of IWKS 3850. Explores the design requirements associated with creating a product that will be manufactured in large quantities and used by potentially thousands of users. These requirements are often very different from those associated with creating a

working prototype. This gap between prototype creation and starting a business offers an interesting and unique set of design challenges. As part of the course, teams of students will engage in a realistic product design cycle. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **IWKS 5900 - Graduate Capstone**

Graduate version of IWKS 4900. Working closely with project sponsors, students design, implement, and evaluate a project for use in local industry and non-profit organizations. One of two alternative capstone courses for the Inworks Graduate/Professional Certificate in Design and Innovation. Prereq: IWKS 5100 and enrollment in the Inworks graduate certificate. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **IWKS 5930 - Special Topics in Human Centered Design and Innovation**

Emergent issues and professional developments in design, innovation and prototyping. Consult the current online Inworks Course List for semester offerings as new special topics courses are frequently added. With permission, may be repeated for credit. Restriction: Restricted to students with graduate standing. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 4

### **IWKS 5970 - Independent Study in Human Centered Design and Innovation**

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to design, innovation and prototyping. With permission, may be repeated for credit. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 6

## **Landscape Architecture**

### **LDAR 1015 - Engaging Landscapes for Wicked Change**

This course will offer students the tools and perspectives to understand how landscapes impact them and others, analyze and describe the forces that inform landscape form, and propose changes to landscapes that will address the wicked problems of our time. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 3601 - Intro to Landscape Arch: Engaging Designed Landscape**

This course is an overview of the historical development, social context and contemporary practice of landscape architecture, which has existed as a profession for over 120 years and has been practiced in one form or another for millennia. Restriction: Restricted to undergrads with sophomore standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 3690 - Landscape Architecture in Other Cultures**

Study abroad. Various studies of landscape architecture, architecture, urbanism, and design to destinations outside of the continental United States. Cross-listed with LDAR 6520. Restriction: Restricted to Junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 9

### **LDAR 4421 - History of Landscape Architecture**

Intro survey course fosters workable understanding of landscape architecture design history and theory and offers a base for understanding trends and ideas influencing contemporary practice. Emphasizes Western Europe and the United States from antiquity to early twentieth century. Prereq: Sophomore standing or higher. Cross-listed with LDAR 5521. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 4430 - Site, Society and Environment**

Sites are defined by relationships within environmental and social settings. Therefore site design should be primarily ethical and secondarily technical. This course examines the implications of this idea through site methodologies, conceptual construction of site, site analysis and site typologies. Restriction: Restricted to students with sophomore standing or higher. Cross-listed with LDAR 6630. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 4435 - Community Engaged Design Practice**

Obtain real-world pre-design and conceptual design experience in complex urban environments focusing on evolving trends in sustainability. Using digital trans-disciplinary learning students will develop comprehensive sustainable strategies that draw from their own sustainable philosophy developed during this class. Cross-listed with LDAR 6635 and ARCH 6257. Restriction: Restricted to undergrads with sophomore standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 4436 - Urban and Local Food Systems**

In this seminar, we will examine the connections between landscape architecture and food production in cities as well as the role that food production plays in rural landscapes. The course material may be historical, theoretical, or oriented toward contemporary research. Cross-listed with LDAR 6636. Restriction: Restricted to undergrads with sophomore standing or higher. Max hours: 3 Credits **Semester Hours:** 3 to 3

### **LDAR 4470 - Plants in Design**

Explores the challenges, opportunities and responsibilities of designing with living, growing, and ever-changing organisms. Students learn to identify plants that are commonly used in the Colorado region and the principles, theories, methods, and techniques for planting design. Restriction: Restricted to undergraduate students at a junior standing or higher. Cross-listed with LDAR 6670. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 4486 - Special Topics in Landscape Architecture**

Lectures, discussion, and projects exploring topics in landscape architecture drawn from current practice, contemporary issues of design and the built environment, and/or landscape history and theory. Focus and content vary each term. Prereq: Sophomore standing or higher. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **LDAR 5500 - Introductory Landscape Architecture Design Studio**

Introduction to basic strategies, methods and techniques of landscape architectural design and representational techniques. Explores fundamental issues of spatial form and landscape experience and meaning. Coreq: LDAR 5510. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 5501 - Landscape Architecture Design Studio 1**

Introduction to basic strategies, methods and techniques of landscape architectural design and representational techniques. Explores fundamental issues of spatial form and landscape experience and meaning. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **LDAR 5502 - Landscape Architecture Design Studio 2**

Problem-based studio course covers strategies, methods and techniques of landscape architectural design with emphasis in more complex social and urban issues, design processes and development and the application of theory and research. Prereq: LDAR 5501 or permission of department chair. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **LDAR 5503 - Landscape Architecture Design Studio 3**

Problem-based studio covering the approaches, techniques and means for planning and designing sites to accommodate development program on a particular site within an identifiable context. Covers issues definition, site analysis, programming, development of design strategies, evaluation site planning, and communication. Prereq: LDAR 5501 and LDAR 5502 or permission of department chair. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **LDAR 5510 - Graphic Media in Landscape Architecture**

Introduces basic principles and methods associated with analog and digital drawing-plan, sections, perspectives, color, shading, composition and projection. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **LDAR 5521 - History of Landscape Architecture**

Intro survey course fosters workable understanding of landscape architecture design history and theory and offers a base for understanding trends and ideas influencing contemporary practice. Emphasizes Western Europe and the United States from antiquity to early twentieth century. Cross-listed with LDAR 4421. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 5530 - Form and Formation of Cities**

This course investigates the origins and types of human settlements; the history of cities and urbanization; urban morphology and the evolution of the built environment; urban form principles and theory; and types of urbanism. Cross-listed with URPL 6350, URBN 6633, and ARCH 6270. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 5532 - Landform Manipulation**

Focuses on the fundamental technical aspects of landscape architectural design and site engineering of related topography, grading, drainage design, landform manipulation, earthwork calculations, and road alignment. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 5540 - Introduction to GIS**

An introduction to GIS as a set of strategies, methods and techniques used to facilitate the inventory and analysis of complex systems. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 5572 - Landscape Ecology**

Course emphasizes continuity and change in an ecology of the natural and man-made landscape. Focuses on biological, geophysical, cultural, and perceptual factors involved in landscape, spatial organization, and urban and regional structure. Introduces field ecology for landscape architecture. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 5573 - Advanced Landscape Ecology**

Critically investigates the performance of complex landscape systems on multiple spatial and temporal scales, with emphasis on the interaction of human and non-human systems. May address issues of sustainability, disaster recovery, mitigation, etc. Prereq: LDAR 5572 or URPL 6500. Max hours: 3 Credits. **Semester Hours:** 3 to 3



### **LDAR 6470 - ACE Mentoring**

Graduate students work with professional architects, designers, and engineers mentoring students in selected local high schools to learn problem solving, graphics and model making to produce a design project. Student mentors develop lesson plans, outcomes and keep a weekly journal. Cross-listed with ARCH 6470 and URPL 6850. Restriction: Restricted to majors within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6520 - Landscape Architecture in Other Cultures**

Study abroad. Various studies of landscape architecture, architecture, urbanism, and design to destinations outside of the continental United States. Cross-listed with LDAR 3690. Restriction: Restricted to majors within the College of Architecture and Planning. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 9

### **LDAR 6604 - Landscape Architecture Design Studio 4**

Intermediate landscape design studios engage design projects and topics that cover diverse design approaches, contexts, and landscape processes at various scales and complexities. Design projects will vary. Students are expected to expand their graphic, oral communication, and design skills.. Prereq: LDAR 5501, 5502, 5503 or permission of department chair. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6605 - Landscape Architecture Design Studio 5**

Intermediate landscape design studios engage design projects and topics that cover diverse design approaches, contexts, and landscape processes at various scales and complexities. Design projects will vary. Students are expected to expand their graphic, oral communication, and design skills. Prereq: LDAR 5501, 5502, 5503, 6604 or permission of department chair. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6606 - Landscape Architecture Design Studio 6**

Advanced design studio covering landscape change in diverse contexts at various scales and complexities. Recommended: completion of 2 graduate level landscape studios or permission of department chair. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **LDAR 6607 - Landscape Architecture Design Studio 7**

Advanced landscape design studios engage design projects and topics that cover diverse design approaches, contexts, and landscape processes at various scales and complexities. Design projects will vary. Students are expected to demonstrate mastery of graphic, oral

communication, and design skills. Prereq: LDAR 5501, 5502, 5503, 6604, 6605, 6606 or permission of department chair. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6608 - Landscape Architecture Design Studio 8**

Advanced landscape design studios engage design projects and topics that cover diverse design approaches, contexts, and landscape processes at various scales and complexities. Design projects will vary. Students are expected to demonstrate mastery of graphic, oral communication, and design skills. Prereq: LDAR 5501, 5502, 5503, 6604, 6605, 6606, 6607 or permission of department chair. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6620 - Landscape Architecture Theory and Criticism**

Explores and assesses theory in landscape architecture and the concepts, ideas and discourses underlying contemporary design approaches. Emphasizes developing critical understanding of the roles and agency of theoretical inquiries in landscape architecture in relation to aligned disciplines. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6625 - Landscape Architecture Field Studies**

Critical field evaluation of built works of landscape architecture using methodological approaches like field measurement, mapping, sketches, photography, written evaluations and applied research. It may also assess the performative aspects of designed landscapes. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6630 - Site, Society and Environment**

Sites are defined by relationships within environmental and social settings. Therefore site design should be primarily ethical and secondarily technical. This course examines the implications of this idea through site methodologies, conceptual construction of site, site analysis and site typologies. Cross-listed with LDAR 4430. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6631 - Landscape Construction Materials and Methods**

Develops understanding of detailed design processes, construction materials and selection of construction methods and documents. Typically taken with LDAR 6605 and 6606 (LDAR Design Studios 5 and 6). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6632 - Site Planning**

Focuses on site planning processes, criteria and decision-making. Includes research, site analysis, and data synthesis as they relate to site context and design concepts. Also addresses

site work (grading and drainage, utilities), cost computation, and creating site and building program. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6635 - Community Engaged Design Practice**

Obtain real-world pre-design and conceptual design experience in complex urban environments focusing on evolving trends in sustainability. Using digital trans-disciplinary learning students will develop comprehensive sustainable strategies that draw from their own sustainable philosophy developed during this class. Cross-listed with ARCH 6257 and LDAR 4435.

Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6636 - Urban and Local Food Systems**

In this seminar, we will examine the connections between landscape architecture and food production in cities as well as the role that food production plays in rural landscapes. The course material may be historical, theoretical, or oriented toward contemporary research. Cross-listed with LDAR 4436. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits **Semester Hours:** 3 to 3

### **LDAR 6637 - Social Justice in Planning**

This course investigates various social justice issues encountered in planning, including conflict resolution; advocacy; environmental justice; social equity; culture and diversity; disadvantaged populations; public engagement techniques; affordability; equal access; and policy impacts. Cross-listed with URPL 6410 and ARCH 6258. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6641 - Computer Applications in Landscape Architecture**

Introduces digital technologies and methods commonly used in landscape architecture including primarily CADD, visualization, graphic design, and other emerging applications. Includes hands-on exercises. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6642 - Landscape Architecture Digital Design Workshop**

Provides hands-on experiences in the principles, software, and theories for emergent 3-D and 4-D design in landscape architectural practice and research. Prereq: LDAR 6641. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6652 - Urban Design Seminar Topics**

Investigates topical issues in urban design, typically within the framework of a theme running through an entire course of study. Focus is on critical evaluation of theory, process and methods. Cross-listed with URBN 6652. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6655 - Urban Ecology**

This lecture/seminar will cover ecological principles as applied to urban systems (lecture portion) and students will do an intensive study, presentation, and discussion on the topic of their choosing (seminar portion). Cross-listed with URPL 6547. Restriction: Restricted to graduate students in the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6670 - Plants in Design**

Explores the challenges, opportunities and responsibilities of designing with living, growing, and ever-changing organisms. Students learn to identify plants that are commonly used in the Colorado region and the principles, theories, methods, and techniques for planting design. Cross-listed with LDAR 4470. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6671 - Plant Material Identification**

Students learn the names, characteristics and site requirements of plants including trees, shrubs, ground covers and perennials commonly used in built works in the Colorado region. Methods are transferable to other regions. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6686 - Special Topics: Landscape Architecture**

Various topical concerns are offered in landscape architecture history, theory, elements, concepts, methods, implementation strategies, and other related areas. Repeatable. Max Hours: 21 Credits. **Semester Hours:** 3 to 3

### **LDAR 6706 - Advanced Landscape Architecture Design Studio Immersive I**

Advanced design studio forms core of the Immersive experience; covers landscape change in diverse contexts at various scales and complexities. Travel competent also required (LDAR 6707). Recommended: complete 2 previous landscape graduate studios or permission of department chair. Co-req: LDAR 6707, LDAR 6740, and LDAR 6745. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **LDAR 6707 - Advanced Landscape Architecture Design Studio Immersive II**

Advanced design studio forms core of the Immersive experience; covers landscape change in diverse contexts at various scales and complexities. Travel anticipated. Recommended:

complete 2 previous landscape graduate studios or permission of department chair. Co-req: LDAR 6706, LDAR 6740, and LDAR 6745. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **LDAR 6711 - Advanced Graphics Landscape Architectural**

Focuses on developing practical and applied expertise in various manual and digital visualization and representation techniques and media used for enhanced effectiveness in visual communication. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6712 - Green Roofs/Living Systems**

The primary objective for this seminar is to give students a general understanding of green roof systems, vegetated roofs above underground architecture and vertical vegetated systems. The seminar will engage in critiques and discussions using international, national and local case studies, covering history, typologies, function, design, master planning and costs. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6720 - Finding Common Ground**

Focuses on principles and societal variables that influence the structure of urban neighborhood space through research application. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6722 - Contested Terrains**

Explores the different processes, factors and forces that determine and influence occupation, land use and built form through the phenomena of conflict and contestation. Design is inherently located within the disputes and discourses involving landscape as location and resource. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6723 - Cinema and the Landscape**

Explores the relationships between landscape and film through theoretical and practical investigations. Explores film's roles in understanding and investigating landscapes, their dynamic qualities and processes, and issues related to film's capacity to construct spatial meaning. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **LDAR 6724 - American Landscapes**

Historical, theoretical and critical evaluation of the development of American landscapes. May cover the economic, philosophical and social trends behind changes in the landscape as well as the intellectual and contextual changes to the theory and practice of landscape architecture. Prereq: LDAR 5521 Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LDAR 6725 - Design Communications**

In this seminar students will learn research and writing skills to produce articles in clear, readable, and substantial prose, from academic criticism to general interest reviews; writing forms and styles, including essays, reports, award applications and writing for oral presentation; and editing basics. Prereq: History and/or theory of landscape architecture or architecture. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LDAR 6735 - The Landscape of Food**

An examination of the reciprocal relationships between landscapes and patters of food production, distribution, and consumption. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LDAR 6740 - Advanced History/Theory Seminar - Immersive Semester**

Investigates topical issues in landscape architecture history/theory, process and methods within the framework of themes/issues running through the immersive semester course of study. Co-requisite LDAR6706 Advanced Landscape Architecture Design Studio - immersive. Restricted to graduate CAP students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LDAR 6741 - Urban Design Process**

Advances current practice by exploring innovative methods of design analysis, production, representation, and communication. Community participation and civic engagement are integral components of seminar. Restrictions: Restricted to Graduate level students in the college of Architecture and Planning. Cross-Listed with URBN 6641, LDAR 6741, and URPL 6398. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **LDAR 6745 - Advanced Media/Technology Seminar - Immersive Semester**

Advances landscape architectural practice by exploring innovative methods of design analysis, production, representation, and communication. Community participation and civic engagement are integral components of this seminar aligned with the immersive studio core track. Co-requisite LDAR6706 Advanced Landscape Architecture Design Studio - immersive. Restricted to graduate CAP students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LDAR 6750 - Professional Practice**

Explores the essential elements of professional practice and equips students with the fundamental knowledge and skills requisite to understand and participate in this practice. Covers office organization, project management, contracts, professional ethics and non-traditional careers. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LDAR 6755 - Urban Housing**

This course examines housing trends and patterns; supply and demand factors; housing policies; housing challenges (e.g., inequitable distribution, special needs, segregation/discrimination, and homelessness); sociological, demographic, and economic considerations; and the roles of planners and the public and private sectors. Cross-listed with ARCH 6205 and URPL 6405. Restriction: Restricted to majors within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6840 - Independent Study**

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to landscape architecture or urban design. Prereq: Permission of instructor. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **LDAR 6850 - GIS Capstone**

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to GIS. Serves as Capstone for LA GIS certificate. Permission of instructor required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6910 - Teaching Assistantship**

Work with a faculty member in a course to assist with course preparation and delivery and learn teaching practices. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **LDAR 6930 - Landscape Architecture Internship**

This experiential learning course provides students the opportunity to participate in and reflect on the practice of landscape architecture by working in a design office. Students will reflect on and critically analyze issues such as leadership, management and collaboration. Prerequisite: This course may only be taken once during a student's academic career and is to be taken after the first year of graduate study. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6949 - Research Tools & Methods**

Introduces students to research in landscape architecture and related fields and disciplines. Provides students with research practices, methods, and methodologies and a critical framework to identify suitable approaches based on diverse projects and contexts. Supports studio, independent study and thesis. Cross-listed with ARCH 6473. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6950 - Thesis Research**

Student works closely with a landscape architecture faculty advisor and thesis committee to develop the thesis through focused research. Research might entail both written and graphic

inquiry leading to specific products with conclusive ideas setting the stage for final thesis. Prereq: LDAR 6949 and permission of department chair. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDAR 6951 - Landscape Architecture Thesis**

The Landscape Architecture thesis is expected to advance the field of landscape architecture by offering new insights into aspects of design, technology, history or professional principles. In this course, the student continues to work independently, but closely with a landscape architecture faculty advisor and thesis committee to complete the thesis. The thesis might take on different final forms (written volume, drawings, maps, digital images), depending on the subject inquiry. For further information on the Landscape Architecture Thesis Track consult the Landscape Architecture Thesis Guidelines. Prereq: LDAR 6949 and 6950. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **Latin**

#### **LATN 1010 - Elementary Latin I**

Introduces grammar, syntax, and vocabulary of Classical Latin, with an emphasis on preparing students to read Latin while improving English grammar and vocabulary skills. Two semesters of Latin may be used to fulfill the CLAS language competency requirement. Term offered: fall. Max hours: 5 Credits. **Semester Hours:** 5 to 5

#### **LATN 1020 - Beginning Latin II**

Completes the presentation of basic Latin grammar, syntax and vocabulary. Introduces students to Latin literature through readings in select authors adapted to meet the needs of beginning students. Note: This course assumes that students have passed LATN 1010 or equivalent, or have taken one year of high school Latin, or possess equivalent proficiency. A grade of C- or higher in LATN 1010 is recommended for success in this course. Term offered: spring. Max hours: 5 Credits. **Semester Hours:** 5 to 5

#### **LATN 1050 - Vocabulary for Professionals**

Studies English words derived from Latin and Greek by analyzing their component parts (prefixes, stems, and suffixes). Cross-listed with ENGL 1050. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **LATN 2840 - Independent Study**

Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

#### **LATN 3000 - Medical Terminology**



The course enables students to understand medical terms by learning the Greek and Latin word elements that form these terms. Term offered: summer. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **LATN 3840 - Independent Study**

Repeatable. Max Hours: 12 Credits. **Semester Hours: 1 to 3**

### **LATN 4840 - Independent Study**

Repeatable. Max Hours: 12 Credits. **Semester Hours: 1 to 3**

### **LATN 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours: 1 to 6**

## **Learning, Devl, and Family Sci**

### **LDFS 5110 - Human Learning**

A review of the research on human learning, including related topics such as information processing and motivation. Various theories of learning are examined in-depth, and their applications to teaching and practices in schools (and in other educational settings) are considered. Repeatable. Max Hours: 6 Credits. **Semester Hours: 3 to 3**

### **LDFS 5240 - Cognition and Instruction**

Explores recent developments in cognition and their implications for instructional practices. Includes theory and research in cognitive psychology and resultant educational practices. Repeatable. Max Hours: 6 Credits. **Semester Hours: 3 to 3**

### **LDFS 5260 - Child Study and Observation**

Involves extensive, systematic observation of young children. Recorded observations are analyzed in terms of child development theories, children's background, setting variables, and are then presented in written and elaborated form. Repeatable. Max Hours: 6 Credits. **Semester Hours: 3 to 3**

### **LDFS 5840 - Learning, Developmental and Family Sciences Independent Study**

Repeatable. Max Hours: 12 Credits. **Semester Hours: 1 to 6**

### **LDFS 5930 - Learning, Developmental and Family Sciences Internship**

Field-based experiences in settings (schools, businesses, governmental agencies, special projects) that are linked closely to the student's professional objectives. Requires a minimum of 150, 225 or 300 clock hours under supervision (two-four credit hours, respectively). Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 4

### **LDFS 6100 - Advanced Child Growth and Development**

Systematic study of the major theories of child growth and development. Focuses on current research regarding infants and children and the implication of such research for education. Cross-listed with LDFS 7100. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **LDFS 6140 - Social Contexts of Adolescence and Schooling**

Systematic study of the major theories of adolescent growth in social contexts, emphasizing the social and cultural construction of the adolescent experience. Focuses on current research regarding adolescents and the implications of the research for education. Cross-listed with LDFS 7140. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **LDFS 6200 - Human Development Over the Life Span**

An inquiry into the experience and meaning of human development over the full span of life. Both analytical and reflective modes of exploration are utilized to approach the study of personhood and the courses and themes of life. Cross-listed with LDFS 7200. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **LDFS 6220 - Adult Development**

Surveys theories and principles of adult development through an ecological perspective with an emphasis on community and educational contexts. Cross listed with LDFS 7220. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **LDFS 6320 - Mind, Brain, and Education**

An introductory survey into contemporary theory and research in developmental cognitive neurosciences and their potential applications to education, aiming to explore how the brain learns, and what it means for learning and development. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDFS 6400 - Observation, Documentation and Assessment**

This course focuses on developing competencies in observation, documentation, and assessment to inform understandings about children and teaching. Students will draw from

child development and ecological theories to observe children's assets, then interpret and analyze how children learn and develop. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDFS 6410 - Social Foundations of Family and Community**

In this course, students of early childhood education will learn to think and act reflectively, critically, and socially, informed by the roles of families and communities of young learners. Course readings, observation, documentation, and reflection provide foundations for the development of relational perspectives on social justice. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDFS 6420 - The Environment as the Third Teacher**

This course will provide students with an understanding of the relationship between the Learning Sciences and Reggio-Inspired practices, and how this relationship can be applied to the design of engaging and dynamic learning environments. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDFS 6600 - Motivation in Contexts**

Theories of human motivation are examined through social and cultural lens directed at phenomena of engagement and disengagement in activities at different levels of scale. Applications are considered for both educators and learners in various social and cultural learning contexts. Cross listed with LDFS 7600. Max hours: 6 Credits. **Semester Hours:** 3 to 3

### **LDFS 6750 - Designing Environment for Learning and Development**

Introduction to concepts, findings, and research methods relevant to theory and research in the Learning Sciences, with specific focus on how those concepts and findings apply to design learning across settings. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDFS 6840 - Learning, Developmental and Family Sciences Independent Study**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

### **LDFS 6910 - Practicum Reflections on Learning**

This course focuses on the pursuit of praxis within the student teacher residency. Reflection on course resources, engagement in ongoing processes of documentation, and reflection within a small group meeting format drive social construction of knowledge about learning and development. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDFS 6950 - Culminating Capstone Experience**

This course provides a learning environment for students to complete an applied project/thesis in education and human development contexts as part of their final capstone experience in the Master's in Learning, Developmental and Family Sciences. Repeatable. Max hours: 3 Credits.

**Semester Hours:** 1 to 3

### **LDFS 7100 - Advanced Child Growth and Development**

Systematic study of the major theories of child growth and development. Focuses on current research regarding infants and children and the implication of such research for education.

Cross listed with LDFS 6100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LDFS 7120 - Family Dynamics**

Review and analysis of issues related to families with exceptional or at-risk young children. Topics include coping skills, family involvement, parent-child interaction, and sources of support. Special attention is given to current research and its application to early intervention.

Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **LDFS 7140 - Social Contexts of Adolescence and Schooling**

Systematic study of the major theories of adolescent growth in social contexts, emphasizing the social and cultural construction of the adolescent experience. Focuses on current research regarding adolescents and the implications of the research for education. Cross-listed with LDFS 6140. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **LDFS 7200 - Human Development Over the Life Span**

An inquiry into the experience and meaning of human development over the full span of life.

Both analytical and reflective modes of exploration are utilized to approach the study of personhood and the courses and themes of life. Cross-listed with LDFS 6200. Max hours: 3

Credits. **Semester Hours:** 3 to 3

### **LDFS 7220 - Adult Development**

Surveys theories and principles of adult development through an ecological perspective with an emphasis on community and educational contexts. Cross-listed with LDFS 6220. Max hours:

3 Credits. **Semester Hours:** 3 to 3

### **LDFS 7600 - Motivation in Contexts**

Theories of human motivation are examined through social and cultural lens directed at phenomena of engagement and disengagement in activities at different levels of scale.

Applications are considered for both educators and learners in various social and cultural

learning contexts. Cross-listed with LDFS 6600. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LDFS 7712 - Learning and Human Development**

Students apply major theories from learning and human development theories to problems of practice and research related to education and community contexts. Restriction: Restricted to EDHD-PhD, LDRE-EDd, and SPSY-PsyD majors within the School of Education and Human Development. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **LDFS 7840 - Learning, Developmental and Family Sciences Independent Study**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

## **Linguistics**

### **LING 2000 - Foundations of Linguistics**

Provides students with the foundations of the scientific study of language. Examines core areas within theoretical linguistics, sociolinguistics, historical linguistics, language acquisition, and writing systems, using a variety of languages. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LING 3100 - Language in Society**

Introduces students to language use in the context of American society. Examines the interaction between language and age, gender, race, ethnicity, education, income, social class, language attitudes, policy and politics. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Lit, Lang, & Cult Resp Teach**

### **LCRT 2000 - Rebels, Villains, & Superheroes: How Children's Literature Shapes Our Identities**

This course explores both classic and contemporary children's and adolescent literature and media in traditional and digital texts, specifically focusing on developing literary understandings, exploring perspectives and personal responses to literature, and inquiring into trends and issues. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 3720 - Introduction to Writing Development and Teaching**

This course introduces students to writing development in children from early childhood through 5th grade. Students will learn how to analyze student writing for strengths and needs in order to design effective writing instruction. Prereq or coreq: EDHD 2930 and LCRT 4710.

Restriction: Restricted to students in Education and Human Development with between 27 and 180 cumulative credit hours. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 4000 - Elementary Literacy Instruction and Assessment Part 1**

This course develops an appreciation, understanding, and application of literacy assessment and instruction in PK-6 classrooms. Interns learn how to use various types of assessment and instruction for reading and writing that address the literacy needs of PK-6 Students. Cross-listed with LCRT 5000. Restriction: Professional Year Admission required. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **LCRT 4001 - Elementary Literacy Instruction and Assessment Part 2**

This course develops an appreciation, understanding, and application of literacy assessment and instruction in PK-6th classrooms. Interns learn how to use various types of assessment and instruction for reading and writing that address the literacy needs of PK-6th Students. Cross-listed with LCRT 5001. Restriction: Professional Year Admission required. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **LCRT 4100 - Secondary Literacy Instruction and Assessment**

Provides knowledge and practice in using specific literacy methods to enhance students' content learning and literacy development in middle schools and high schools. Various methods of literacy assessment to guide instruction for students are emphasized. Instructional strategies for special populations, especially speakers of English as a second language, are also addressed. Cross-listed with LCRT 5100. Restriction: Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 4200 - Theory and Methods of Teaching Secondary English**

Focuses on teaching/learning theories and practical classroom strategies for teaching English Language Arts to adolescent learners in middle school, junior high school and high school classes. Cross-listed with LCRT 5200. Restriction: Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 4201 - Adolescent Literature**

Reading and evaluating fiction and non-fiction appropriate for students in middle and senior high school. Emphasis is on modern literature. Cross-listed with LCRT 5201. Restriction: Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 4210 - Literacy Development Pre K-3rd Grade**

Focuses on children's developing literacy understandings and proficiencies beginning in the preschool years. Attention is given to language development, assessment, and instruction in pre-kindergarten through third grade, partnerships with community literacy institutions provide information on their use for literacy development. Cross-listed with LCRT 5210. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 4220 - Literacy Routines & Assessment, Pre K-3rd Grade**

This course will focus on the routines and practices which allow for student specific instruction and assessment in the Early Literacy classroom. Participants will examine and critique current literacy routines and assessments needed to best meet the needs of culturally and linguistically diverse children. Cross-listed with LCRT 5220. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 4230 - Early Literacy Instruction**

Participants will examine Pre K-3rd grade literacy instruction to understand how to meet the needs of young students. The course will analyze instructional practices for young gifted, special needs and English language learning students to best meet the needs of all learners. Cross-listed with LCRT 5230 Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 4710 - Primary Literacy for Diverse Learners: Pre K-3rd Grade**

This course provides teachers with a basic understanding of reading and writing development in preschool and early primary grades, while considering specific strategies for using and teaching reading and writing in early primary grades (pre-K-3). This course is cross-listed with LCRT 5710. Prereq or coreq: EDHD 2930 and LCRT 3720. Restriction: Restricted to students in Education and Human Development with between 27 and 180 cumulative credit hours. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5000 - Elementary Literacy Instruction and Assessment Part 1**

This course develops an appreciation, understanding, and application of literacy assessment and instruction in PK-6 classrooms. Interns learn how to use various types of assessment and instruction for reading and writing that address the literacy needs of PK-6 Students. Cross-listed with LCRT 4000. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5001 - Elementary Literacy Instruction and Assessment Part 2**

This course develops an appreciation, understanding, and application of literacy assessment and instruction in PK-6th classrooms. Interns learn how to use various types of assessment and instruction for reading and writing that address the literacy needs of PK-6th Students. Cross-listed with LCRT 4001. Prereq: LCRT 4000 or LCRT 5000. Restriction: Restricted to students in

the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5020 - Reading Development, Instruction and Assessment**

This course involves critical examination of reading process and instruction. Teachers develop an understanding of the principles of sociopsycholinguistic theory in learning and teaching. Organization options for reading instruction for native and non-native speakers of English at all ages and ability levels will be examined. Teachers become familiar with materials and methods used for reading and reading instruction in schools, including multicultural materials, students' interaction with and response to materials; and techniques to assess and evaluate students' reading. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5028 - Developing Strategic Readers, Grades 4-12**

Focuses on supporting adolescents' developing literacy understandings especially related to vocabulary, reading comprehension, writing, and student engagement across all content areas in the upper elementary grades through high school. Importance is placed on putting new teaching practices in place. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5029 - Developing 21st Century Literacy Curriculum, Gr 4-12**

Focuses on adolescents' developing literacy understandings across all content areas upper elementary grades through high school. Attention is given to comprehension and critical thinking including assessment, unit planning, problem-based learning, research cycles, technology, and putting new teaching practices into place. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5055 - Literacy Assessment & Informed Instruction**

Focuses on reading, writing, and language assessments and their use to plan and deliver informed classroom and intervention instruction. Principles of literacy assessment, state and federal law, instructional strategies and interventions are learned through creation of student literacy profiles. Needs of both L1 and L2 learners as well as other diverse learners are considered. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5100 - Secondary Literacy Instruction and Assessment**

Provides knowledge and practice in using specific literacy methods to enhance students' content learning and literacy development in middle schools and high schools. Various methods of literacy assessment to guide instruction for students are emphasized. Instructional strategies for special populations, especially speakers of English as a second language, are also addressed. Cross-listed with LCRT 4100. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits. **Semester Hours:** 3 to 3



## **LCRT 5150 - Culturally Relevant & Responsive Pedagogies**

Provides an examination of broad cultural diversity regarding the role of culture in teaching and learning in the classroom. After examining their educational contexts, students gain skills to differentiate instruction for diverse learners; foster quality instruction that demonstrates respect for cultural pluralism; and, create equitable educational environments. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LCRT 5200 - Theory and Methods of English Education**

Focuses on teaching and learning theories and practical classroom strategies for teaching English Language Arts to students in middle school and high school. Cross-listed with LCRT 4200. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LCRT 5201 - Adolescent Literature**

Reading and evaluating fiction and non-fiction appropriate for students in middle and senior high school. Emphasis is on modern literature. Cross-listed with LCRT 4201. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LCRT 5210 - Literacy Development Pre K-3rd Grade**

Focuses on children's developing literacy understandings and proficiencies beginning in the preschool years. Attention is given to language development, assessment, and instruction in pre-kindergarten through third grade, partnerships with community literacy institutions provide information on their use for literacy development. Cross-listed with LCRT 4210. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LCRT 5220 - Literacy Routines and Assessment, Pre K-3rd Grade**

This course will focus on the routines and practices which allow for student specific instruction and assessment in the Early Literacy classroom. Participants will examine and critique current literacy routines and assessments needed to best meet the needs of culturally and linguistically diverse children. Cross-listed with LCRT 4220. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LCRT 5230 - Early Literacy Instruction**

Participants will examine Pre K-3rd grade literacy instruction to understand how to meet the needs of young students. The course will analyze instructional practices for young gifted, special needs and English language learning students to best meet the needs of all learners. Cross-listed with LCRT 4230. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LCRT 5310 - Literacy Assessment & Processing: Guided Reading**

The course will explore the format and components of Guided Reading Plus, including: responsive teaching, summative and formative assessment, content/language objectives, oral language development, strategies for problem solving, comprehension, fluency, word solving strategies, and the reciprocity of reading and writing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5320 - Teaching Students with Reading Difficulties**

The course will explore specific teaching moves that help children build an effective literacy processing system and become independent readers. We will study areas of reading difficulty and ways of assessing students to determine their strengths and instructional needs. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5330 - Deepening Literacy Understandings**

This will explore the power of formative assessment for observation and interpretation of reading behaviors. We will study the continuum of literacy learning as a foundation for learning the behaviors and understandings that must be taught at each text level. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5710 - Primary Literacy for Diverse Learners, Pre K-Grade 3**

This course provides teachers with a basic understanding of reading and writing development in preschool and early primary grades, while considering specific strategies for using and teaching reading and writing in early primary grades (pre-K-3). This course is cross-listed with LCRT 4710. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5720 - Writing Development, Instruction and Assessment**

Course covers current theories of writing development as they relate to classroom practices, direct participation in personal writing, conferencing with other course members, revision of pieces, and the sharing of final products. Participants use research to help analyze and assess student writing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5724 - Colorado Writing Project I**

Teachers will experience participating in writers' workshop, writing several pieces, taking them through revision and workshop groups. Teachers will also read, discuss, and respond to texts about teaching writing and preparing students to take state writing tests. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **LCRT 5726 - Colorado Writing Project II**

Teachers will experience participating in writers' workshop, writing several pieces, taking them through revision and workshop groups. Teachers will also read, discuss, and respond to texts about teaching writing and preparing students to take state writing tests. Max hours: 4 Credits.

**Semester Hours:** 4 to 4

### **LCRT 5728 - Colorado Writing Project III**

Teachers will experience participating in writers' workshop, writing several pieces, taking them through revision and workshop groups. Teachers will also read, discuss, and respond to texts about teaching writing and preparing students to take state writing tests. Max hours: 4 Credits.

**Semester Hours:** 4 to 4

### **LCRT 5730 - Language and Literacy Across the Curriculum**

Explores the value and use of reading and writing as tools for learning across the curriculum on a K-12 basis. Specific needs and strategies for assisting at-risk and second language learners are also discussed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5770 - Effective Literacy Instruction for Diverse Learners**

Focuses on exploring, applying, and evaluating research-based instructional models and learning strategies for teaching literacy to diverse learners. Students develop a professional practice of providing instruction to support oral language, academic reading, and academic writing for native speakers of English, multilingual and bidialectal learners of English. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5780 - Connecting Cultures Through Literature**

This course looks at the issue of multicultural literacy for K-8th grade and how children's and young adult literature can be used to create a high quality multicultural curriculum which enhances literacy development and covers all the content areas. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **LCRT 5790 - Children's Literature: Grimm through Graphic Novels**

Children's literature course exploring the historical development of children's literature and its influence on contemporary literature and media. Emphasized are various genre including both fiction and nonfiction, choosing and critiquing children's literature, and children's book awards. Graphic novels and e-books are explored as the leading edge of this area. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **LCRT 5795 - Current Children's Literature**

This course explores children's literature, including electronic books, within the past decade. A wide range of genres will be explored with a particular emphasis on newer authors and illustrators in the field. Participants will also practice critiquing children's literature and selecting books for instruction. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5810 - Oral & Written Language & Literacy**

Focuses on oral/written language and literacy in educational and home settings. Addresses learners with native English, English as additional language, bi-dialectal, and multilingual. Students analyze language and literacy samples using language structures and discourse patterns to develop instructional techniques. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5815 - Family Literacies in Diverse Communities**

Focuses on involving and connecting with families and communities of classroom learners. Students gain practical strategies to identify resources and funds of knowledge that diverse learners and families bring to schools; and, use learners' cultural resources and references to promote all aspects of learning in the classroom. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **LCRT 5831 - Reading Recovery: Observation Survey**

A workshop class which introduces the participants to an understanding of literacy acquisition and prepares them to implement the Reading Recovery Program within their school or district. Prereq: reading and language arts methods. A minimum of three years primary teaching or reading teaching experience. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **LCRT 5835 - Special Topics: Literacy and Language**

Specific topics vary but will include the exploration of literacy development and instruction in particular populations or with specific focuses. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 0.5 to 3

### **LCRT 5840 - Independent Study: LCRT**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 4

### **LCRT 5911 - Reading Recovery Practicum: Early Intervention (Theory, Procedures and Practice)**

A field experience which extends the participants' understanding of literacy acquisition and prepares them to implement the Reading Recovery Program within their school or district. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LCRT 6840 - Independent Study: LCRT**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 4

## **LCRT 6910 - Seminar & Practicum in Literacy and Language**

Provides opportunities for advanced students in the M.A. program to apply concepts acquired in course work and other educational experiences to specific situations. Students will work in schools, classrooms, administrative offices, or community centers (according to their experiences, interests and current teaching positions; sites to be identified before course begins) to study the potential for change in schools and society and to reflect upon their roles as change agents in the field. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LCRT 6911 - Seminar and Practicum in Literacy and Language, 7-12+**

Provides opportunities for advanced students in the M.A. program to apply concepts acquired in course work and other educational experiences to specific situations. Students will work in schools, classrooms, administrative offices, or community centers (according to their experience, interests and current teaching positions; sites to be identified before course begins) to study the potential for change in schools and society and reflect upon their own roles as change agents in the field. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LCRT 6913 - Reading Recovery: Practicum**

A practicum which refines the participants' understanding of literacy acquisition and finalizes preparation to implement the Reading Recovery Program within their school/district. Max hours: 4 Credits. **Semester Hours:** 4 to 4

## **LCRT 6915 - Seminar and Practicum in Literacy Professional Development**

This final practicum is designed for teachers to enhance their education as reading professionals in two ways. First, by continuing to reflect on and analyze their own and others' teaching, participants will deepen their understanding of how to assess and design instruction based on the needs of students. Second, through structured coaching activities, participants will improve their skills in providing literacy leadership. Max hours: 3 Credits. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **LCRT 6950 - Master's Thesis**

Max hours: 4 Credits. **Semester Hours:** 4 to 4

## **Management**

## **MGMT 1000 - Introduction to Business**

This course will introduce students to the nature and role of business in our society. Problems confronting business are surveyed from a management, financial, economic and marketing viewpoint. Career opportunities in business are also considered. Students are advised to take this course during their freshman year and may not take it in the junior or senior years. Prereq: Open to freshman and sophomores, non-degree students and music majors at all levels. Cross-listed with BMIN 1000. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 1111 - Business Freshman Seminar**

This course introduces students to the nature and role of business in our society. Career opportunities in business are also considered. This course is designed to assist first year students transition to life on campus. The course content is integrated with various activities designed to familiarize 1st year students with school resources, develop critical thinking and writing skills and build relationships critical to ongoing academic success. Students are advised to take this course during the first semester of their freshman year. Note: Credit will not be given for both MGMT 1111 and MGMT 1000. Restriction: Restricted to Freshman level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 2939 - Internship**

Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **MGMT 3000 - Managing Individuals and Teams**

Focuses on helping students understand how to manage individuals and groups effectively. Students are encouraged to know themselves better and how their behavior affects how they deal with organizational situations; they also learn how individuals differ and how to design, manage and work in a team. This is a business core course therefore a grade of a 'c' or better must be earned to satisfy graduation requirements. Restriction: Restricted to undergraduate students at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 3010 - Managing People for a Competitive Advantage**

Provides an overview of the management of human resources in organizations. Areas of study include recruitment, selection, training, career development, performance appraisal, compensation and employee or labor relations. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 3111 - Business Transfer Student Seminar**

This course is designed to assist first year transfer students transition to UC Denver. The course includes various activities designed to familiarize students with University and Business School resources, develop critical thinking, writing, time management and study skills, and build relationships critical to ongoing academic success. Students are advised to take this course

during their first or second semester at UC Denver. Concurrent registration in MGMT 3000 is required. Cross-listed with MGMT 3000. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 1 Credits. **Semester Hours:** 1 to 1

### **MGMT 3420 - Ethics: A Formula for Success**

Students will learn how to spot and address red flags that foster unethical behavior in both publicly-traded and privately-held businesses. Governance and stakeholder management techniques that incentivize ethical behavior will be highlighted using examples of companies that are financially successful by "doing the right thing." Principle-based ethics are emphasized, namely, integrity, trust, accountability, transparency, fairness, respect, viability, and compliance with the rule of law. Cross-listed with MGMT 6420, ISMG 4785, and ISMG 6885. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 3830 - Business and Sustainability**

Business activity can have significant environmental and societal impacts. This course examines some of the ways that companies and consumers are reducing their impact on communities and the environment. Sustainability issues will be considered from a management, finance, marketing, and consumer perspective. Climate change and renewable energy will be featured topics in the class. Prereq: MKTG 3000. Cross-listed with MGMT 4830, BUSN 6830. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 3939 - Internship**

Supervised experiences involving the application of concepts and skills in an employment situation. To enroll in an internship, students must work with the Experiential Learning Center on campus and have a 2.40 GPA or higher. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **MGMT 4028 - Travel Study Topics**

Join your classmates in an international travel study course to understand the business operations of another culture. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **MGMT 4100 - Leveraging Diversity and Inclusion in Business**

Practical and policy issues that arise from living and working in a multicultural world in order to promote informed, effective management. Particular emphasis is given to the development of innovative approaches to managing the challenges posed by a work force that differs in

characteristics, such as race, gender, ethnicity, age, lifestyle and disability. Restriction: Restricted to undergraduate students at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4120 - Collaborative Experiential Learning**

Explores the place and role of architecture as an instrument of critical social engagement and cultural change. Business students will collaborate with Arch students to explore the role of history and precedent in the design process through client driven projects that demonstrate their proficiency in applying business analysis to project design. Prereq: Senior standing. Restriction: Restricted to undergraduate Business majors. This course will be in collaboration with ARCH 4120. Note: this class will fulfill the Business Schools experiential learning requirement. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4140 - Negotiation Skills/Property: Effective Strategies**

Course covers real and personal property law, including ownership, title, landlord/tenant, easements, environmental law, and zoning. Emerging issues in intellectual property are also reviewed, including U. S. law and international treaties and agreements. Negotiation techniques through role-playing are emphasized. NOTE: This course is an elective course and may not be used to fulfill the CORE BLAW 3050 course. Meets concurrently with BLAW 4140. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4230 - Sports Management**

This course is designed as a speaker series of sports and entertainment industry elite focusing on: industry trends, strategic planning, managing revenue streams, managing media, managing for effectiveness, managing post-merger integration, leadership and leading change. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4231 - Managing Sports Finance**

This course explores the problems and solutions of financing in the sports industry. It focuses on stadium/venue financing, sports team valuation, event guarantee estimation, player salary issues, and managing disparate revenue streams. The course utilizes speakers, articles, problem sets, and cases. Prereq: DSCI/BANA 2010 and ACCT 2200 both with a grade of C- or higher, ECON 2012 and ECON 2022. Coreq: FNCE 3000. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4330 - Mastering Management**



Experiential learning course designed to give students hands-on practice developing critical management skills such as: negotiation, conflict management, group consensus-building, and interpersonal feedback and communication. Prereq: MGMT 3000 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4350 - Leading Organizational Change**

Focuses on the tasks and skills of a leader in leading organizational changes. Topics include: diagnosing problems, creating urgency, building the change team, creating a vision, implementing change strategies, sustaining the momentum and making change stick. These tasks and skills are studied in various organizational change contexts. Prereq: MGMT 3000 with a grade of C or higher. Coreq: MGMT 4370. As a corequisite, MGMT 4370 can be taken concurrently or completed prior. If completed prior, must earn a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4370 - Organization Design**

Examines how to structure organizations to perform effectively. Addresses the effects of computer-based information technologies (e.g. intranets, extranets, and the internet) on firm structure, strategy, and culture. Emphasis is placed on the role of the task, technology, and the environment as constraints on organizational design. Prereq: MGMT 3000 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4400 - Environments of International Business**

An overview of the environmental complexities that arise when business activities and firms cross national borders. Key international business environmental complexities associated with country differences, cross-border trade and investment, and global monetary system are examined. Prereq: MGMT 3000 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher and SPAN-BA majors with a SPP subplan at junior level. Cross-listed with INTB 4400. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4410 - Operations of International Business**

Focuses on the impact of environmental factors on international business operations and the identification and analysis of complex strategic and operational issues facing business firms in global markets. The strategies and structures of international businesses, alternative foreign market entry modes, and the unique roles of various business functions at international business firms are explained and assessed. Prereq: INTB 4400 or MGMT 4400 with a grade of C

or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Cross-listed with INTB 4410. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4420 - HR: Talent MGT**

Students analyze data/metrics, develop and deliver evidenced based solutions to multiple talent challenges presented in a real-world case study with a focus on managing a Talent Pipeline consisting of Performance Based Hiring, Development, Engagement, Performance, and Retention. Coreq: MGMT 3010. As a corequisite, MGMT 3010 can be taken concurrently or completed prior. If completed prior, must earn a D- or higher. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4430 - Human Resources Management: Training**

Covers training methods, theories, research findings. Students design and deliver their own training program, including collecting and analyzing metrics to gauge training success. Coreq: MGMT 3010. As a corequisite, MGMT 3010 can be taken concurrently or completed prior. If completed prior, must earn a D- or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Cross-listed with MGMT 6720. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4440 - Human Resource Management: Performance Management**

Focuses on the design and implementation of human resource management systems to assess and enhance employee performance. Areas of study include performance definition and measurement, goal setting, feedback, employee development, rater training, and pay for performance. Coreq: MGMT 3010. As a corequisite, MGMT 3010 can be taken concurrently or completed prior. If completed prior, must earn a D- or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4450 - Human Resources Management: Compensation**

Develop and administer pay systems considering economic and social pressures, traditional approaches and strategic choices in managing compensation. Current theory research and practice. Students design a compensation strategy and a system that translates that strategy into reality. Prereq: DSCI 2010 or BANA 2010 with a grade of 'C-' or higher. Coreq: MGMT 3010. As a corequisite, MGMT 3010 can be taken concurrently or completed prior. If completed prior, must earn a D- or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Cross-listed with MGMT 6740. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4460 - Employee Benefits and Workforce Risk Management**

The course surveys an array of popular employee benefit programs to attract, protect, and retain valued employees. It also focusses on risk management programs that invest in human capital and address the downside risks of employing a workforce. Cross-listed with MGMT 6760 and RISK 4409/6409. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4481 - Human Resources Management: Career and employment coaching**

Focuses on enhanced approaches to discovering employment opportunities and providing career coaching, with an emphasis on unemployed veterans. Topics include discovering the unique capabilities a job-seeking veteran possesses, addressing the barriers to employment he or she may face, and methods the job seeker can use to educate prospective employers about the contributions to organizational success he or she can make. Cross-listed with MGMT 6781. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4482 - Human Resources Management: Connecting talent with business needs**

Focuses on methods for connecting businesses and public-sector organizations with job seekers who possess the capabilities that will fuel profitable growth and mission success. Topics include networking to establish relationships with hiring decisions makers, exploration conversations to identify an organization's success factors, and identifying job seekers (with a special emphasis on unemployed veterans) with the requisite skills, knowledge, traits, and aptitudes. Cross-listed with MGMT 6782. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4500 - Business Policy and Strategic Management**

Emphasis is on integrating the economic, market, social or political, technological, and components of the external environment with the internal characteristics of the firm; and deriving through analysis the appropriate interaction between the firm and its environment to facilitate accomplishment of the firm's objectives. Open only to business students in their graduation semester. This is a business core course therefore a grade of 'c' or better must be earned to satisfy Business graduation requirements. Prereq: Senior standing and completion of all business core courses with appropriate grade; Core = ISMG 2050, DSCI/BANA 2010, ACCT 2200, ACCT 2220, BLAW 3050 (or BLAW 3000) all with a 'C-' or higher; ISMG 3000, DSCI/BANA 3000, FNCE 3000, MGMT 3000, and MKTG 3000 all with a grade of 'C' or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4770 - Human Resource Information Systems**

Focuses on the management of human resource information systems. It addresses how modern information systems tools can provide better human resource intelligence to users in today's

enterprises, allowing them to make better decisions. It examines how information about workforce and human resource management processes can be collected and used to set targets to meet strategic objectives, monitor performance, receive notifications when performance is below expectations and respond immediately by taking corrective actions. Prereq: MGMT 3000. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4780 - Preparing A Business Plan**

Turn a new business idea into a viable new business by developing a comprehensive business plan including: analysis of the potential demand for the product or service and potential customers; identify competitive advantages and marketing strategies; generate pro forma financial projections; and, design the management team needed. Prereq: ENTP 3000 AND either ENTP 3500 with a grade of 'C-' or higher or BLAW 4120 or ENTP 3120 with a grade of 'C' or higher. For non-business majors only. Can be applied to Entrepreneurship Certificate. Business majors enroll in either MGMT 4780 or MKTG 4780. Come to first class meeting with a carefully considered business idea. Cross-listed with MKTG 4780 and ENTP 3780. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MGMT 4824 - Sustainable Business/CSR Field Study**

Gain practical, hands-on experience with aspects of sustainable business and/or corporate social responsibility. Work with a local company/non-profit/or government organization under the direction of an executive to conduct a sustainability-focused project which is important to the organization's sustainability initiative. Students may petition to use previous coursework or experience in sustainability to fulfill the prerequisite. Please contact the [undergrad.advising@ucdenver.edu](mailto:undergrad.advising@ucdenver.edu) for more details. Prereq: MGMT 3830 or MGMT 4110 with a C or higher or department consent. Restrictions: Restricted to undergraduate majors within the Business School. Cross-listed with MGMT 6824. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4825 - Sustainable Change Leadership: Turning Business Into a Force for Good**

This course develops leadership from the perspective of managing the people side of change required to transform a traditional business to one that is not only financially successful but also a genuine "force for good" for our natural and social environment. The BLab Impact Assessment tool is used to measure, monitor, and link sustainable business practices to drive continuous improvement and innovation. Students will conduct hands-on, practical work with local businesses to develop change leadership skills as they relate to sustainability. NOTE: this course will satisfy the BGen requirement (experiential learning requirement). Restriction: Restricted to undergraduate Business majors with junior standing or higher. Cross-listed with MGMT 6825. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4830 - Business and Sustainability**

Business activity can have significant environmental and societal impacts. This course examines some of the ways that companies and consumers are reducing their impact on communities and the environment. Sustainability issues will be considered from a management, finance, marketing, and consumer perspective. Climate change and renewable energy will be featured topics in the class. Prereq: MKTG 3000 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Cross-listed with MGMT 3830, BUSN 6830. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4832 - Law & Negotiation in the Sports and Entertainment Industry**

This course provides an overview of major legal issues in the sports and entertainment industries. Students develop the skills required to negotiate contracts in these industries. Topics include contracts, copyright, trademark, employment and tort law principles relevant in the sports and entertainment fields. Prereq: MGMT 3000 with a grade of C (2.0) or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4834 - Global Sports & Entertainment Management**

Through 2 weeks of visiting organizations with industry elite in London a broader perspective on the sports and entertainment industry is gained. Students will be asked to do advance reading, participate in discussions, keep a journal and write a reflection paper at the end of the experience. Site visits (to be confirmed) include: Arsenal Football Club, Premier League, the O2 Arena, NHL and NBA regular season games in London, 2012 Olympics Committee, Formula One, Hollywood Studio-International Finance Office, Theatre, Lord's Cricket Ground, All England Lawn Tennis Club/Wimbledon and the Office of the Minister of Sport. Prereq: MGMT 3000. Cross-listed with MGMT 6834, MKTG 4834, and MKTG 6834. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4840 - Independent Study**

Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 8

### **MGMT 4900 - Project Management and Practice**

Covers the factors necessary for successful management of system development or enhancement projects. Both technical and behavioral aspects of project management are discussed. The focus is on management of development for enterprise-level systems. Topics include: managing the system life cycle; requirements determination, logical design, physical design, testing, implementation; system and database integration issues; network and client-server management; metrics for project management and system performance evaluation; managing expectations: superiors, users, team members and others related to the project;

determining skill requirements and staffing the project; cost-effectiveness analysis; reporting and presentation techniques; effective management of both behavioral and technical aspects of the project; change management. Note: Successful completion of this course meets the educational requirements to sit for both the PMP and CAPM exams. Prereq: Students must be a junior status and have completed either: 1. ISMG 3000 or ACCT 4054 and MGMT 3000 and MKTG 3000, OR 2. ISMG 3000 and ISMG 3500 and ISMG 3600. Restriction: Restricted to undergraduate students in the Business School. Cross-listed with ISMG 4900. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 4950 - Special Topics in Management**

A number of different topics in management are offered under this course number. Consult the 'Schedule Planner' for current course offerings. Prerequisites vary depending on the topic and instructor requirements. Cross-listed with MGMT 5800. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **MGMT 5800 - Special Topics in Management**

A number of different topics in management are offered under this course number. Consult the Schedule Planner for current course offerings. Prerequisites vary depending on the topic and instructor requirements. Cross-listed with MGMT 4950. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **MGMT 5939 - Internship**

Supervised experiences involving the application of concepts and skills in an employment situation. Prereq: 21 semester hours and 3.5 GPA. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **MGMT 6020 - Leadership in Difficult Times**

The test of a leader often is their ability to lead their organizations through difficult times and crises. Such situations could be downsizing, product defects, ethical violations, a terrorist attack or a natural disaster. Successful management of these situations can strengthen and renew the organization. Inability to manage these situations can tarnish the organization's reputation and threaten its survival. This course examines leadership under stress and provides frameworks for categorizing and analyzing these difficult situations. The course also addresses strategies that leaders can use to enable their organizations to manage, recover and learn from these difficult experiences. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6028 - Travel Study Topics**

Join your classmates in an international travel study course to understand the business operations of another culture. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **MGMT 6040 - Managing Global Talent**

This course has two objectives: (1) to understand the impact of cultural differences in the management of people in multinational firms; and (2) to compare and contrast critical human resource issues in the contexts of domestic and international operations. Topics include recruitment, staffing, training, performance appraisal, compensation, and labor and management relations in markets around the world. (This course qualifies as an international elective for the MS in International Business program). Restriction: Restricted to graduate Business majors and NDGR majors with a sub-plan of NBA or NBD, within the Business School. Cross-listed with INTB 6040. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6320 - Leading Organizational Change**

Instruction in the analysis, diagnosis, and resolution of problems in organizing people at work. Models of organizational change are examined. Group experiences, analysis of cases and readings are stressed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6360 - Designing Effective Organizations**

Examines how to design organizations within the context of environmental, technological, and task constraints. The emphasis is on learning how to recognize and correct structural problems through the analysis of existing organizations in which the students are involved. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6380 - Managing People for Competitive Advantage**

Focuses on the management of human resources in organizations. Oriented toward the practical application of human resources management principles in areas such as: equal employment opportunity, affirmative action, human resources planning, recruitment, staffing, benefits and compensation, labor relations, training, career management, performance management, and occupational health and safety. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6420 - Ethics: A Formula for Success**

Students will learn how to spot and address red flags that foster unethical behavior in both publicly-traded and privately-held businesses. Governance and stakeholder management techniques that incentivize ethical behavior will be highlighted using examples of companies that are financially successful by "doing the right thing." Principle-based ethics are emphasized, namely, integrity, trust, accountability, transparency, fairness, respect, viability, and compliance with the rule of law. Cross-listed with MGMT 3420, ISMG 6885, and ISMG 4785. Restriction: Restricted to graduate business school students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6610 - Business Strategy Lab**

Gain strategy experience collaborating with and consulting to Senior Executives of a client company. This is a hands on, project-based course. Students will analyze a strategic initiative as defined by and with the organization's leadership and provide their client with research, insights and actionable strategic ideas. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6710 - HR: Talent MGT**

Students analyze data/metrics, develop and deliver evidenced based solutions to multiple talent challenges presented in a real-world case study with a focus on managing a Talent Pipeline consisting of Performance Based Hiring, Development, Engagement, Performance, and Retention. Prereq: MGMT 6380. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6720 - Human Resources Management: Training**

Covers training methods, theories, research findings. Students design and deliver their own training program, including collecting and analyzing metrics to gauge training success. Co-req: MGMT 6380. Cross-listed with MGMT 4430. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6730 - Human Resources Management: Performance Management**

Focuses on the design and implementation of human resources management systems to assess and enhance employee performance. Areas of study include performance measurement, rater training, goal setting and feedback. Prereq: MGMT 6380. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6740 - Human Resources Management: Compensation**

Develop and administer pay systems considering economic and social pressures, traditional approaches and strategic choices in managing compensation. Current theory research and practice. Students design a compensation strategy and a system that translates that strategy



into reality. Prereq: MGMT 6380 and BUSN 6530. Cross-listed with MGMT 4450. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6750 - HRM: Investing in People: HR Analytics**

Managing talent-organization and deployment-and connections between talent and strategy in organizations. Rooted in a systematic, logical approach that challenges traditional ideas. Stresses the logical connections between progressive HR practices and firm performance and the use of data to demonstrate financial impact of the connections. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MGMT 6760 - Employee Benefits and Workforce Risk Management**

The course surveys an array of popular employee benefit programs to attract, protect, and retain valued employees. It also focusses on risk management programs that invest in human capital and address the downside risks of employing a workforce. Cross-listed with MGMT 4460 and RISK 4409/6409. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6781 - Human Resources Management: Career and employment coaching**

Focuses on enhanced approaches to discovering employment opportunities and providing career coaching, with an emphasis on unemployed veterans. Topics include discovering the unique capabilities a job-seeking veteran possesses, addressing the barriers to employment he or she may face, and methods the job seeker can use to educate prospective employers about the contributions to organizational success he or she can make. Cross-listed with MGMT 4481. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6782 - Human Resources Management: Connecting talent with business needs**

Focuses on methods for connecting businesses and public-sector organizations with job seekers who possess the capabilities that will fuel profitable growth and mission success. Topics include networking to establish relationships with hiring decisions makers, exploration conversations to identify an organization's success factors, and identifying job seekers (with a special emphasis on unemployed veterans) with the requisite skills, knowledge, traits, and aptitudes. Cross-listed with MGMT 4482. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6800 - Special Topics in Management**

Current topics in management will be occasionally offered. Consult the 'Schedule Planner' for specific offerings or contact an advisor for information. Repeatable. Max Hours: 6 Credits.

**Semester Hours:** 3 to 3

### **MGMT 6801 - Career Strategies**

The downsizing, restructuring, and re-engineering so prevalent in U.S. industries and companies have strongly affected the job and career market. Every individual must sharpen his/her competencies and skills in order to compete effectively in the changing job market. This course is designed to assist students in understanding and operating in this difficult job market. Using many of the concepts that organizations use in their strategy formulation process, and coupled with individual techniques and skills proven effective in job searches and career planning, this course prepares students to deal with the issues involved in finding a job and pursuing a career. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6803 - Visionary Leadership**

Examines the challenges faced by visionary leaders and the approaches used by these individuals (creation, articulation, and implementation of vision) to transform organizations. Participants utilize these approaches employed by effective leaders to develop plans for their own organizational success. Group experiences, applied readings, and videos are used to clarify the opportunities available. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6804 - Bargaining and Negotiation**

Designed as a seminar in bargaining, negotiation and interpersonal conflict management. Through simulations, role plays and personal experience, students practice and develop their negotiation skills and see how negotiations differ depending on the type of situation encountered. Specific topics covered include: the nature of negotiation, the role of the negotiation context, interdependence and power, strategies and tactics of distributive and integrative bargaining, negotiation ethics and interpersonal conflicting resolution. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6806 - Corporate Entrepreneurship**

Competitive performance in a global economy requires continuous innovation and new business growth. The creation and development of new ventures is a primary strategy for internally-generated growth. Managing innovation and new ventures requires attitudes, knowledge, and practices different from those usually required for the management of mature business units. This course provides the perspective, knowledge, and specific skills required for successful entrepreneurial management. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6808 - Leadership Development**

Instruction in the design and practice of leadership development. Case studies of effective organizations will be examined and a variety of assessment and development activities will be completed as part of the course. Students will learn how to develop others while experiencing the development techniques first hand. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **MGMT 6820 - Management Field Studies**

The objective of this course is to provide an opportunity for the in-depth examination of an actual management problem in a local organization. Much like an independent study conducted under faculty guidance, each student will execute a unique project suited to his or her interests. Priority is given to MGMT students. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **MGMT 6821 - Managing for Sustainability**

This course will consider how companies are using social responsibility as a competitive advantage. The so-called green revolution is calling for organizations to take on increasing responsibility for environmental conservation, employee well being, and community development. This course considers how organizations can work with various stockholders (employees, customers, communities, society-at-large) to develop and promote mutually beneficial products and solutions to key social needs and concerns. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **MGMT 6822 - Business Ethics and Corporate Social Responsibility**

Covers business ethics and corporate social responsibility in the global contexts of employment, marketing, product liability, the environment and other areas. Students compare ethical theories, including utilitarianism, Kantian, Rawlsian, stockholder, stakeholder and social contract and apply some or all of these theories to actual and hypothetical case studies. The doctrine of corporate social responsibility is defined and explored and diverging views of corporate social responsibility are discussed. Examples of how corporate social responsibility can increase a company's goodwill and net income are analyzed. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **MGMT 6823 - The Sustainable Business Opportunity**

This course examines the negative impact of a rapidly growing global economy on the natural and human environment. It shows that the need to create a more sustainable global economy represents a huge opportunity for business and how sustainability-based strategies drive innovation, competitive advantage and improved financial performance. It will examine both environmental aspects of sustainability like green supply chains, lifecycle analysis, energy and

water efficiency, as well as initiatives that nurture and enhance the value of our human resources such as community development, employee and customer relations, employee wellness, telecommuting, and other stakeholder engagement in sustainability. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6824 - Sustainable Business/CSR Field Study**

Gain practical, hands-on experience with aspects of sustainable business and/or corporate social responsibility. Work with a local company/non-profit/or government organization under the direction of an executive to conduct a sustainability-focused project which is important to the organization's sustainability initiative. Prereq: Completion of one or more sustainability focused courses or permission of instructor. Cross-listed with MGMT 4824. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6825 - Sustainable Change Leadership: Turning Business Into a Force for Good**

This course develops leadership from the perspective of managing the people side of change required to transform a traditional business to one that is not only financially successful but also a genuine "force for good" for our natural and social environment. The B Lab Impact Assessment tool is used to measure, monitor, and link sustainable business practices to drive continuous improvement and innovation. Students will conduct hands-on, practical work with local businesses to develop change leadership skills as they relate to sustainability. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with MGMT 4825. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6826 - Business and the Natural Environment**

Considers the impact of economic activity on the natural environment and the regulatory, market and corporate voluntary responses to reducing this impact. Topics: externalities, life cycle assessment, closed-loop systems, DfE (Design for the Environment), corporate sustainability reporting, and effective corporate sustainability strategies. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6827 - Global Climate Change**

Global climate change may be one of the most important challenges facing business in the 21st century. This course will introduce the potential impacts of climate, then discuss possible regulatory responses to and business risks and opportunities that may emerge if climate change occurs. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6830 - Sports and Entertainment Management**

This course is designed as a speaker series of sports and entertainment industry elite focusing on: industry trends, strategic planning, managing revenue streams, managing media, managing for effectiveness, managing post-merger integration, leadership and leading change. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6832 - Law and Negotiation in the Sports/ Entertainment Industries**

Provides an overview of major legal issues in the sports and entertainment industries. Students develop the skills required to negotiate contracts in these industries. Topics include contracts with athletes (agency, player and sponsorship), stadium financing and sports franchises, labor law and collective bargaining agreements, entertainment contracts in the music, film and live theater fields and copyright, trademark and tort law principles in the sports and entertainment industries. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6834 - London Calling: Global Sports and Entertainment Management**

Through 2 weeks of visiting organizations and talking with industry elite in London a broader perspective on the Sports and Entertainment Industry is gained. Students will be asked to do advanced reading, participate in discussions, keep a journal and write a reflection paper at the end of the experience. Site visits (to be confirmed) include: Arsenal Football Club, Premier League, the O2 Arena, NHL and NBA regular season games in London, 2012 Olympics Committee, Formula One, Hollywood Studio-International Finance Office, Theatre, Lord's Cricket Ground, All England Lawn Tennis Club/Wimbledon and the office of the Minister of Sport. Cross-listed with MGMT 4834, MKTG 4834, and MKTG 6834. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MGMT 6840 - Independent Study**

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 8

### **MGMT 6950 - Master's Thesis**

Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

## **Marketing**

### **MKTG 1000 - Introduction to Marketing**

Provides an introduction and overview of marketing. Discusses market and buyer analysis. Includes product planning, pricing, promotion and distribution of goods and services. For non-

business majors only. Does not satisfy the MKTG 3000 business requirement. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 2939 - Internship**

Introductory supervised experiences involving the applications, concepts and skills in an employment situation. Prereq: sophomore standing Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **MKTG 3000 - Principles of Marketing**

Focuses on the basic marketing concepts of Buyer Behavior, Marketing Research, Marketing Planning and Implementation and the marketing process of product, price, distribution and promotion. This is a business core course therefore a grade of a 'C' or better must be earned to satisfy graduation requirements. Restriction: Restricted to undergraduate students at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 3100 - Marketing Research**

Provides practical experience in research methodologies, planning an investigation, designing a questionnaire, selecting a sample, interpreting results and making a report. Techniques focus on attitude surveys, behavioral experiments, and qualitative research. Prereq: DSCI/BANA 2010 with a 'C-' or higher and MKTG 3000 with a grade of 'C' or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 3200 - Consumer Behavior**

Focuses on improving the student's understanding of consumer and organizational buying behavior as a basis for better formulation and implementation of marketing strategy. Blends concepts from the behavioral sciences with empirical evidence and introduces buyer research techniques. Prereq: MKTG 3000 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 3300 - Social Media in Business**

Social media has become a central component of many business activities including marketing, HR, product management and the supply chain. In this course, we examine the organizational use of social media technologies such as blogs and social networks, as well as the use of social media analytics to drive business strategy. Prereq: MKTG 3000 with a grade of C or higher Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Cross-listed with ISMG 3300. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MKTG 3939 - Internship**

Supervised experiences involving the application of concepts and skills in an employment situation. To enroll in an internship, students must work with the Experiential Learning Center on campus and have a 2.40 GPA or higher. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

## **MKTG 4000 - Advertising**

Analyzes principles and practices in advertising from a managerial viewpoint. Considers the reasons to advertise, product and market analysis as the planning phase of the advertising program, media selection, creation and production of advertisements, copy testing, and development of advertising budgets. Prereq: MKTG 3000 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MKTG 4050 - Applied Marketing Management**

The course is designed to enhance the student's ability to formulate and implement a marketing plan and to better understand the relationship of marketing to other business functions. Emphasized application of marketing concepts through the use of cases, simulations or projects. Prereq: MKTG 3000 with a grade of 'C' or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MKTG 4051 - Honors Applied Marketing Management**

Offered as the second course in a sequence following the principles of marketing course (MKTG 3000) it is therefore designed to enhance the student's ability to formulate and implement a marketing plan and to better understand the relationship of marketing to other business functions. It will emphasize application of marketing concepts through the use of cases, simulations or projects. This Honors course is modeled after understanding of the concepts covered. Note: MKTG 4051 is open only to marketing majors who have a cumulative GPA of 3.2 or higher. Students taking MKTG 4051 cannot receive credit for MKTG 3050 or MKTG 4050. Prereq: MKTG 3000, cumulative GPA of 3.2 or higher. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MKTG 4200 - International Marketing**

Studies managerial marketing policies and practices of firms marketing their products in foreign countries. Analytical survey of institutions, functions, policies, and practices in international marketing. Relates marketing activities to market structure and environment. Prereq: MKTG 3000 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a

junior standing or higher. Cross-listed with INTB 4200. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 4220 - Asian Business Development and Marketing**

This course investigates methods of Business Development and Marketing in the Asian Business Environment. It seeks to examine and explain methods of determining market potential and techniques tapping this market potential in this dynamic and rapidly growing business environment the course uses a combination of experienced guest speakers, Asian business cases and projects to develop the marketing skills in students to successfully compete in Asia. Prereq: MKTG 3000 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 4250 - Sports Marketing**

This course is designed to understand and evaluate the role and functions of marketing in sports organizations. The course seeks to evaluate the marketing function in sports as well as understand the behavior of fans as consumers, celebrity product endorsements, sponsorship of sporting events for all sport providers, sports intermediaries and channels and advertising and promotion in the sports world. The course is taught using lectures, guest speakers, cases and examinations. Prereq: MKTG 3000 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 4251 - Music and Media Marketing**

This course explores strategies, tactics and best practices utilized in the marketing of music, performing and dramatic arts. From recording artists and movie studios to repertory theater companies and symphony orchestras, artists and organizations need sound marketing strategies to engage audiences, sell tickets, and market merchandise to maintain profitable and sustainable operations. Restriction: Restricted to undergraduate Business Students with Junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 4252 - The Business of Sports**

This course focuses on strategic business issues in the sports industry. It covers business issues for both spectator sports and individual participant Sports. Spectator sports include football, basketball, hockey, baseball, extreme competitive sports, Olympic sports etc.). Participant sports include outdoor adventure Sports (e.g., Hiking, whitewater rafting, Biking), skiing, golf, tennis, and youth sports. Topics include industry trends, strategic planning, management challenges, financing in sports, and major legal issues in sports. Prereq: MKTG 3000 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3



### **MKTG 4580 - International Transportation**

Analysis of international transportation (primarily sea and air) in world economy. Detailed study of cargo documentation and freight rate patterns. Included are liability patterns, logistics, economics, and national policies of transportation. Prereq: MKTG 3000 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 4620 - Customer Service Strategies**

This course is designed to help students identify and effectively use managerial concepts of customer service. Students will develop an understanding of the concepts as well as knowledge of the strategies that will lead to higher levels of customer satisfaction, loyalty and ultimately customer retention. Students will have the opportunity to gain firsthand knowledge of these concepts and strategies through lectures, guest speakers, cases and projects. Prereq: MKTG 3000 with a C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 4700 - Personal Selling and Sales Management**

Introduces the student to principles of personal selling and issues in managing the field sales force. Focuses on models of personal selling, recruiting, selection, training, compensation, supervision, and motivation, as well as organizing the field sales force, sales analysis, forecasting and budgeting. Prereq: MKTG 3000 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 4720 - Internet Marketing**

Distinctly influences the way marketers conduct marketing activities. The Internet media promises to establish marketing theories, identifies obsolete situations, explores how marketing functions have irreversibly changed as a result of the internet, and outlines basic marketing strategies for successful online marketing. Prereq: MKTG 3000 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors at a junior standing or higher. Cross-listed with ENTP 4720. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 4730 - New Product Development for Consumer and Sports Products**

The creation of new products is essential in today's business environment. It is conducive to organizational growth and long-term survival. This course addresses the new product development process in depth. It introduces students to key concepts and issues. It also provides a series of practices which will help students deliver higher value and be more competitive. Prereq: MKTG 3000 with a C or higher. Restriction: Restricted to undergraduate

Business majors at a junior standing or higher. Cross-listed with ENTP 4730. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 4760 - Customer Relationship Management**

This marketing-theory driven course examines customer relationship management (CRM) as a key strategic process for organizations. Composed of people, technology and processes, effective CRM optimizes the selection or identification, acquisition, growth and retention of desired customers to maximize profit. Besides presenting an overview of the CRM process, its strategic role in the organization and its place in marketing, students have an opportunity to create simulated CRM database using popular software package that help to illustrate what CRM can do, its advantages and limitations. Prereq: MKTG 3000 with a grade of C or higher. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Cross-listed with ISMG 4760. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 4780 - Preparing Business Plan**

Turn a new business idea into a viable new business by developing a comprehensive business plan including: analysis of the potential demand for the product or service and potential customers; identify competitive advantages and marketing strategies; generate pro forma financial projections; and, design the management team needed. Prereq: ENTP 3000 AND either ENTP 3500 with a grade of 'C-' or higher or BLAW 4120 or ENTP 3120 with a grade of 'C' or higher. For non-business majors only. Can be applied to Entrepreneurship Certificate. Business majors enroll in either MGMT 4780 or MKTG 4780. Come to first class meeting with a carefully considered business idea. Cross-listed with MGMT 4780 and ENTP 3780. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 4800 - Marketing Seminar**

Offered to provide consideration of a wide variety of topical issues in marketing, such as, services marketing, pricing, product development or creative marketing strategies. Prereq: MKTG 3000. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 4834 - Global Sports & Entertainment Management**

Through 2 weeks of visiting organizations and talking with industry elite in London a broader perspective on the Sports and Entertainment Industry is gained. Students will be asked to do advanced reading, participate in discussions, keep a journal and write a reflection paper at the end of the experience. Site visits (to be confirmed) include: Arsenal Football Club, Premier League, the O2 Arena, NHL and NBA regular season games in London, 2012 Olympics Committee, Formula One, Hollywood Studio-International Finance Office, Theatre, Lord's Cricket Ground, All England Lawn Tennis Club/Wimbledon and the office of the Minister of Sport. Cross-listed with MGMT 4834, MGMT 6834, and MKTG 6834. Prereq: MGMT 3000.

Restriction: Restricted to undergraduate Business majors with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 4840 - Independent Study**

Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 8

### **MKTG 4950 - Special Topics**

Courses offered on an irregular basis for the purpose of presenting new subject matter in marketing. Prerequisites vary depending upon the particular topic and instructor requirements. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **MKTG 5939 - Internship**

Supervised experiences involving the applications of concepts and skills in an employment situation. Prereq: 21 semester hours and 3.5 GPA. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **MKTG 6010 - Marketing Strategy**

Focuses on marketing strategy and marketing planning. Addresses the formulation and implementation of marketing plans within the context of the overall strategies and objectives of both profit and not-for-profit organizations. There is heavy emphasis on group projects and presentations. Note: This course is intended to be taken near the end of your program. Prereq: BUSN 6560 completed with a C or better. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 6020 - Marketing Challenges at the Global Frontier**

Explores problems, practices, and strategies involved in marketing goods and services internationally. Emphasized analysis of uncontrollable environmental forces, including cultures, governments, legal systems, and economic conditions, as they affect international marketing planning. Emphasis on practice through the use of projects and speakers. Coreq: BUSN 6560. Instructor may waive coreq for business students. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD. Note: students cannot receive credit for both MKTG 6020 and INTB 6026. Cross-listed with INTB 6026. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 6030 - Sales and Sales Force Management**

Focuses on issues in personal selling and managing the field sales force. Deals with organization sales analysis, forecasting, budgeting and operating, with particular emphasis on the selling

task, recruiting, selection, training, compensation, supervision and motivation. Coreq: BUSN 6560. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 6040 - Services Marketing for Traditional and Creative Industries**

Service industries such as health care, finance, information, entertainment, retailing, government, and professional services comprise 80% of the total employment and GDP of the US and an increasing share of GDP in both other developed and emerging economies. This course provides students with the skills to design and deliver high quality services, improve customer satisfaction, and effectively manage service organizations. It also addresses how small, medium, and large firms can develop marketing plans and strategies in the current service environment. A variety of teaching methods may be used to demonstrate these concepts, such as cases, projects, field experiences, and/or guest speakers. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 6050 - Market Research Analytics I**

The objectives relate to effective marketing information management and include: (1) developing an understanding of the techniques and procedures that can be used to generate timely and relevant marketing information; (2) gaining experience in developing and analyzing information that is decision oriented; and (3) being able to make recommendations and decisions based on relevant and timely information. Computer analysis and projects are employed. Coreq: BUSN 6560 or 6530 or BANA 6610. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 6051 - Market Research Analytics II**

This course focuses on advanced topics and applications in marketing research. A variety of teaching techniques will be used. Prereq: MKTG 6050. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 6060 - Consumer Intelligence--Psychology and Behavior**

Why do consumers buy? How can marketing activities influence buyer behavior? Answers to these questions are key to marketing success & business fortune. In this course, we explore how to understand the heart & soul of consumers & examine the strategic implications of consumer psychology. Course participants conduct a market segmentation project that identifies & dissects various buyer groups within a chosen market. Restriction: Restricted to graduate business students or NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 6070 - Brand Identity & Marketing Communication Strategy**

A brand's identity has a substantial influence on an organization's financial wealth. But brand identity is not simply the result of a great product or a creative ad. Utilizing many real examples, historic approaches, and current trends, this course explores how integrated marketing communications help build a brand identity that reverberates with consumers. Participants create an integrated marketing communications campaign. Coreq: BUSN 6560. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 6080 - Marketing in Emerging Markets**

Explores problems, practices and strategies involved in marketing goods and services in emerging markets. Emphasizes analysis of uncontrollable environmental forces, including cultures, government, legal, systems and economic conditions as they affect marketing planning. Coreq: BUSN 6560. Note: students cannot receive credit for both MKTG 6080 and INTB 6082. Cross-listed with INTB 6082. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 6090 - Big Data Customer Relationship Management**

Involves the management of customer relationships to maximize customer service and its associated benefits at minimal cost. Includes services marketing concepts and techniques, IT applications, and software. Designed to acquaint students with practices and issues in state-of-the-art customer relationship management systems in an array of different types of organizations. The course initially focuses on the nature of customer relationship management (CRM) the interaction between strategic management planning, corporate culture and CRM. Other topics examined include successful models of CRM, managing the employee or CRM interface, marketing research, and CRM, and customer trust, loyalty, CRM customer service levels, customer service levels, customer profitability or metrics, selecting and integrating CRM software, CRM integration and timing of CRM roll-out. Coreq: BUSN 6560. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 6091 - Strategic Product Marketing**

Familiarizes students with key theories and practices regarding products. Successful development of a new product, or extending the life cycle of an existing product. Outlines and necessitates the understanding of product development, key concepts related to successful product management over the course of its life cycle including the way the product function adds synergy to other marketing activities and, in turn, benefits from them. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 6092 - Digital Media Marketing - Tools and Analytics**

Explores how the marketing function has irreversibly changed as a result of the internet and to lay out basic marketing strategies for successful online marketing. Coreq: BUSN 6560. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 6093 - Hot Topics in Digital Marketing**

Students attend The Digital Marketing Summit Conference in Denver, CO. Conference speakers include Leaders in the field of Digital Marketing. Participants will learn about the latest & greatest hot trends in Digital Marketing going on NOW! This conference also includes networking sessions with national industry Leaders and Denver's "Digiterati" community. Numerous state of the art topics include Content Marketing, Search & SEO, Social Media, Mobile, Social Intelligence Data, Wearables, and Engagement. The course builds on this content in a HYBRID format in which participants continue to engage in online learning & discussion, while applying these concepts to create their own unique digital programs. The Digital Conference constitutes the classroom portion of the course and the remainder is completed via additional reading & application under the direction of the course Professor. Enrollment is limited so make plans early. Contact the Director of the Marketing Discipline (Vicki.lane@ucdenver.edu) to reserve your spot. Special conference fees apply. Restriction: Restricted to graduate majors within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 6094 - Marketing Issues in the Chinese Environment**

This course assesses numerous marketing and marketing related topics in the Chinese environment with the objective of helping the graduate student develop managerial and marketing expertise. In specific, the course pinpoints key developments in the Chinese business environment, develops expertise in conducting market opportunity analysis, assesses market entry conditions and strategies and applies marketing mix strategies in the context of the Chinese environment. Note: It is recommended for students to take BUSN 6560 or INTB 6000 prior to this course. Cross-listed with INTB 6094. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MKTG 6200 - Marketing Intelligence and Metrics**

Every manager knows that effective marketing is critical to successfully competing in today's dynamic business environments. Unfortunately, most managers are not clear on how to assess the financial impact of their firms' marketing vehicles, programs or systems. To provide the needed clarity, this course offers a toolkit of skills that will help in three areas, 1) identifying what to assess, 2) making accurate assessments, and 3) applying the results to future decisions. Having a holistic understanding of market-based action-outcomes is essential for both marketing professionals and all managers with customer-based, profit and loss responsibility, especially those looking to give their careers a long-term competitive edge. Coreq: BUSN 6560. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MKTG 6700 - Marketing Travel Study**

This is a 2-week travel course, designed to focus on the marketing of the specific country we visit. In the past the travel course has been to Spain and Costa Rica, but the country of destination may be different every time (usually offered every other year). While in the country, students will visit companies (such as advertising agencies, marketing research firms, local grocery stores, marketing departments of multinational corporations, etc.), have lectures/discussions on marketing in that country and work on a marketing plan for a local company or not-for-profit organization. Prereq: BUSN 6560 with a C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MKTG 6800 - Topics in Marketing**

Courses offered irregularly for the purpose of presenting new subject matter in marketing. Consult the current 'Schedule Planner' for semester offerings. Prereq: BUSN 6560. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

## **MKTG 6820 - Sports & Entertainment Marketing**

This course focuses on techniques for formulating marketing plans for various types of sports organizations. The course deals with marketing issues particularly germane to sports organizations such as: fans as consumers, fan loyalty, sports pricing, servicescapes, player development and sports sponsorships. This course includes lectures, guest speakers, cases, examinations and student group projects. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MKTG 6822 - "Fan"tastical Consumers of American Sports and Entertainment**

This course explores the study of consumer behavior via the lens of American Sports and Entertainment. Class occurs while students attend a variety of sports and entertainment performances. Students engage in experiential learning via participant and observation research techniques as they attend live performances of American sports and entertainment. The class will attend and study consumers and fans in a variety of venues, (e.g., Baseball, LaCrosse, Fun Run, Hike, Golf, Symphony, Rock Concert Festival, Jazz Concert Festival, American Ninja Warrior filming, Broadway Play, Cirque de Solei, and Museum exhibition). These performances primarily take place in downtown centers, e.g., Pepsi Center, Denver Performing Arts Complex, Coors Field, Sports Authority Field at Mile High, Walk or run through various Denver parks, 16th St. Mall, The Civic Center, the Denver Art Museum. Students will engage in observational and immersive consumer behavior research techniques as part of their experience. They will complete assignments relevant for consumer understanding and business practice. Special fee. Co-Req: BUSN 6560. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MKTG 6824 - Sales and Negotiation for Consumer, Services, Sports, and Entertainment Industries**

This course focuses on developing sales skills and techniques for success in the sports and entertainment industries. Students also develop the skills required to negotiate contracts in these industries. Coreq: BUSN 6560. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MKTG 6826 - The Sports and Entertainment Industry**

This course is designed as a speaker series of sports and entertainment industry elite focusing on: industry trends, strategic planning, management challenges, financing in sports and entertainment business (e.g., stadium/venue financing, sports team valuation, entertainment event guarantee estimation, player/artist salary issues, franchises, and managing disparate revenue streams), and major legal issues in the sports and entertainment industries (entertainment contracts, copyright, trademark and tort law). Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MKTG 6830 - Marketing & Global Sustainability**

Marketing & Global Sustainability focuses on the role of marketing in sustainable for-profit and not-for-profit companies from a global perspective. The course examines sustainable business practices and trends; green brands, green labels, and greenwashing; socially-conscious and "green" customer segments; innovating for sustainable new products and services; sustainable retailing and supply chains; and sustainability as a competitive advantage. The course will employ a variety of pedagogical techniques including lectures, discussion, guest speakers, case studies, and projects. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MKTG 6834 - Global Sports & Entertainment Management**

Through 2 weeks of visiting organizations and talking with industry elite in London a broader perspective on the Sports and Entertainment Industry is gained. Students will be asked to do advanced reading, participate in discussions, keep a journal and write a reflection paper at the end of the experience. Site visits (to be confirmed) include: Arsenal Football Club, Premier League, the O2 Arena, NHL and NBA regular season games in London, 2012 Olympics Committee, Formula One, Hollywood Studio-International Finance Office, Theatre, Lord's Cricket Ground, All England Lawn Tennis Club/Wimbledon and the office of the Minister of Sport. Cross-listed with MGMT 4834, MGMT 6834, and MKTG 4834. Restriction: Restricted to graduate business school students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MKTG 6840 - Independent Study**



Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Prereq: Permission of instructor. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 8

## **Master of Integrated Sciences**

### **MINS 5000 - Topics**

With prior approval by a candidate's advisor, an MIS candidate may enroll in an upper division course in science, computer science, mathematics, and complete additional work for graduate credit. Prereq: MIS candidate with 12 hours of upper division (4000 level) or graduate level work completed. Term offered: fall, spring, summer. Repeatable. Max Hours: 8 Credits.

**Semester Hours:** 3 to 4

### **MINS 5200 - Research Methods in Interdisciplinary Science**

This course introduces methods used in interdisciplinary research in the physical and natural sciences, mathematics, and computer science and prepares students for developing research-based Master's project/thesis proposals. Topics include the scientific method and ethics, experimental design, data collection and analysis, literature searches, evaluation of scientific literature, scientific writing, and oral presentation. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MINS 5840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **MINS 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **MINS 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **MINS 5950 - Master's Thesis**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: advisor approval. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 6

### **MINS 5960 - Master's Project**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: advisor approval. Term offered: fall, spring, summer. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 4

### **Math Content Knowledge for Ed**

#### **MCKE 5000 - Algebraic Patterns and Functions I**

Systematic study of the core elements of algebra: linear, quadratic, exponential, logarithmic functions and their graphs. Includes modeling using graphing calculators and real world applications. Concepts are linked to other scientific, mathematical, and pedagogical domains. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: permission of project director. Max hours: 4 Credits. **Semester Hours:** 4 to 4

#### **MCKE 5002 - Algebraic Patterns and Functions II**

This course is a continuation of the material covered in MATH 5000. Topics that will be covered include logarithmic, exponential and trigonometric functions and applications, parametric equations, systems of equations and inequalities, matrices and linear programming. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 5000 or equivalent. Prereq: Graduate standing. Max hours: 4 Credits. **Semester Hours:** 4 to 4

#### **MCKE 5004 - Statistics and Probability**

Studies the collection, presentation, and analysis of data; and elements and applications of counting discrete probability. Includes real world applications and technology. Concepts are linked to other scientific, mathematical, and pedagogical domains. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: permission of project director. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **MCKE 5005 - Geometry**

Systematic study of advanced geometric concepts: history of geometry and measurement, patterns among shapes, 2- and 3-dimensional shapes, constructions, symmetry or transformational geometry. Includes applications and activity-oriented instruction. Concepts are linked to other scientific, mathematical, and pedagogical domains. This course is not applicable toward any degree in the College of Liberal and Sciences. Prereq: permission of project director. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **MCKE 5006 - Mathematics of Change**

Systematic study of the application of calculus to the analysis of changing systems in real world applications. Emphasizes the connections that exist between calculus and aspects of middle school curricula. Concepts are linked to other scientific, mathematical, and pedagogical domains. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 5000 or equivalent. Prereq: Graduate standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MCKE 5007 - Discrete Math--Counting the Possibilities**

Systematic study of basic techniques in discrete mathematics and their various applications: permutations and combinations, inclusion or exclusion, pigeonhole principle, graph theory, and recursive pattern solving. Applications to topics such as network analysis and voting theory are stressed. Concepts are linked to other scientific, mathematical, pedagogical domains. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 5000 or equivalent. Prereq: Graduate standing. Max Hours: 4 Credits. **Semester Hours:** 4 to 4

### **MCKE 5008 - Discovery and Use of the History of Math**

Systematic study of the people, events, ideas and issues from the history of mathematics, focusing on historical topics that are central to the discipline and teaching of mathematics and emphasizing web research of historical topics of interest. Concepts are linked to other scientific, mathematical, and pedagogical domains. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: permission of the project director. Max Hours: 4 Credits. **Semester Hours:** 4 to 4

### **MCKE 5009 - Math Modeling--Using and Applying Math**

Systematic study of math modeling using algebra, geometry, discrete mathematics, rates of change, and statistics to solve real-world problems in areas such as finance, biology, economics, and physics. Concepts are linked to other scientific, mathematical, societal, and pedagogical domains. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 5009 or equivalent. Prereq: Graduate standing. Max Hours: 4 Credits. **Semester Hours:** 4 to 4

### **MCKE 5011 - Mathematics and Science of Musical Instruments**

A mathematical modeling course which investigates the mathematics and physics behind musical instruments while providing a deeper understanding of trigonometry and elementary calculus concepts. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 5000 and MATH 5002 or equivalent. Prereq: Graduate standing. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **MCKE 5018 - Topics in Mathematics Education for Teachers**

Topics vary from semester to semester. Designed for professional mathematics teachers. This course will not count towards a degree in Applied Mathematics. Consent of the instructor required for enrollment. Repeatable. Max Hours: 50 Credits. **Semester Hours:** 0.3 to 50

### **MCKE 5140 - Introduction to Modern Algebra**

Studies the fundamental algebraic structures used in modern mathematics. Topics include groups, rings, fields, and polynomials. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 3000 or equivalent. Prereq: Graduate standing. Cross-listed with MATH 4140. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MCKE 5210 - Higher Geometry I**

Studies the foundations of modern geometry by examining axiomatic systems for various geometrics, with an emphasis on non-Euclidean hyperbolic geometry. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 3000 or equivalent. Prereq: Graduate standing. Cross-listed with MATH 3210. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MCKE 5250 - Problem Solving Tools**

Students learn and refine both problem solving techniques and computer programming skills. Examples, exercises, and projects are taken from a wide range of mathematical topics including algebra, calculus, linear algebra and probability. Note: This course will not count toward a graduate degree in applied mathematics. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have mathematical knowledge equivalent to three semesters of calculus (e.g., MATH 1401, 2411, 2421). This course can be taken concurrently with MATH 2421. Cross-listed with MATH 3250. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MCKE 5310 - Introduction to Real Analysis I**

Calculus of one variable, the real number system, continuity, differentiation, integration theory, sequence and series. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 2421 and MATH 3000 or equivalent. Prereq: Graduate standing. Cross-listed with MATH 4310. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MCKE 5408 - Applied Graph Theory**

Introduces discrete structures and applications of graph theory to computer science, engineering, operations research, social science, and biology. Topics include connectivity, coloring, trees, Euler and Hamiltonian paths and circuits, matching and covering problems, shortest route and network flows. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 3000 or equivalent. Prereq: Graduate standing. Cross-listed with MATH 4408. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MCKE 5409 - Applied Combinatorics**

Major emphasis is on applied combinatorics and combinatorial algorithms, with applications in computer science and operations. Topics include general counting methods, generating functions, recurrence relations, inclusion-exclusion, and block designs. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 3000 or equivalent. Prereq: Graduate standing. Cross-listed with MATH 4409. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MCKE 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **Math Education**

### **MTED 3040 - Mathematics for Elementary Teachers**

Key mathematical concepts for K-6 teachers informed by NCTM & Common Core State Standards, such as place-value number systems, rational, proportional, & algebraic reasoning, geometrical concepts, & statistical/probability ideas. Students' meaningful, enjoyable learning is promoted via problem solving activities. Cross-listed with MTED 5400. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 4002 - Elementary Mathematics Teaching I**

Prepares elementary teachers to teach mathematics to PreK-6 students while applying principles of the National Council of Teachers of Mathematics to mathematical learning. Teachers explore ways to help all elementary students become flexible and resourceful mathematical problem solvers. Cross-listed with MTED 5002. Restriction: Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 4003 - Elementary Mathematics Teaching II**

Develops the mathematical and pedagogical understandings and competence of elementary teachers, focusing on instructional assessment, principles, and practices. Cross-listed with MTED 5003. Prereq: MTED 4002. Restriction: Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 4300 - Curriculum and Methods for Teaching Mathematics**

Fosters teachers' use of task-based mathematics pedagogy, including orchestrating students' mathematical discourse, to develop mathematics classrooms in which the teacher builds from students' current understandings, accommodates for students' differences, and has high expectations for all students. Cross-listed with MTED 5300. Restriction: Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 4301 - Assessment and Equity in Mathematics Instruction**

Examines mathematics assessment and equity from both a teacher's and a student's perspective. Focuses on assessment as a process, during which a teacher gathers evidence of students' mathematical knowledge and understanding and then uses that evidence to make instructional decisions. Restriction: Professional Year Admission required. Cross-listed with MTED 5301. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 5002 - Elementary Mathematics Teaching I**

Prepares elementary teachers to teach mathematics to PreK-6 students while applying principles of the National Council of Teachers of Mathematics to mathematical learning. Teachers explore ways to help all elementary students become flexible and resourceful mathematical problem solvers. Cross-listed with MTED 4002. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 5003 - Elementary Mathematics Teaching II**

Develops the mathematical and pedagogical understandings and competence of elementary teachers, focusing on instructional assessment, principles, and practices. Cross-listed with MTED 4003. Prereq: MTED 4002 or MTED 5002. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 5030 - Theories Of Mathematics Learning**

Develops educators' knowledge of foundational theories and conceptual frameworks in mathematics education. MTED 5030 and 7030 are cross-listed. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MTED 5040 - Mathematics Teaching - Theory and Practice**

Develops educators' research-based understandings and practices of PreK-12 mathematics teaching and learning. MTED 5040 and 7040 are cross-listed. Repeatable. Repeatable. Max

Hours: 9 Credits. **Semester Hours:** 3 to 3

### **MTED 5050 - Critique Of Mathematics Education Research**

Develops educators' understanding of various research studies in mathematics education, including research focusing on mathematics teaching and learning, attending to students' mathematical reasoning, and teaching mathematics for social justice and equity. Increases educators' competence, confidence and enthusiasm in critiquing research. MTED 5050 and 7050 are cross-listed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 5060 - Developmental Pathways In Students' Mathematical Thinking**

Fosters educators' development of research-based ways of determining (a) what to look for, (b) how to look for, (c) how to synthesize and report on, and (d) how to incorporate in pedagogy data-grounded inferences about children's mathematical thinking. MTED 5060 and 7060 are cross-listed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 5070 - (Re)Humanizing the Teaching and Learning of Mathematics**

Expands educators' conceptions of society's role in determining what counts as mathematics to be taught and learned. Develops understanding of historical and systemic marginalization in mathematics education. Increases abilities to address issues of privilege and oppression that impact students' opportunities. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 5300 - Curriculum and Methods for Teaching Mathematics**

Fosters teachers' use of task-based mathematics pedagogy, including orchestrating students' mathematical discourse, to develop mathematics classrooms in which the teacher builds from students' current understandings, accommodates for students' differences, and has high expectations for all students. Cross-listed with MTED 4300. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 5301 - Assessment and Equity in Mathematics Instruction**

Examines mathematics assessment and equity from both a teacher's and a student's perspective. Focuses on assessment as a process, during which a teacher gathers evidence of students' mathematical knowledge and understanding and then uses that evidence to make instructional decisions. Prereq: Concurrent enrollment in an internship or permission of instructor. Cross-listed with MTED 4301. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 5400 - Mathematics for Elementary Teachers**

Key mathematical concepts for K-6 teachers informed by NCTM & Common Core State Standards, such as place-value number systems, rational, proportional, & algebraic reasoning, geometrical concepts, & statistical/probability ideas. Students' meaningful, enjoyable learning is promoted via problem solving activities. Cross-listed with MTED 3040. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 5619 - Expanding Conceptions of Number: Quantity and Operation**

Teachers' learning will focus on quantities and operations in place value number systems, how students understand such systems, and how teaching may promote students' progress. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 5620 - Developing Fractional & Proportional Reasoning**

Teachers' learning will focus on quantities and operations involved with ratio, fraction, and proportion; and on how students understand ratio, fraction and proportion; and how teaching may promote students' progress. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 5621 - A World of (Different) Numbers: Quantity and Operation**

Develops K-12 teachers' understanding of number systems and the ability to foster students' understanding. Focuses on number, quantity, and operation. Applicable to teaching students at all grade levels in line with the K-12 Common Core Standards. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 5622 - Expanding Conceptions of Algebra**

Develops K-12 teachers' understanding of algebra concepts and the ability to foster students' understanding. Focuses on equivalence, variable, covariation, and function. Applicable to teaching students at all grade levels in line with the K-12 Common Core Standards. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 5623 - Geometrical Ways Of Reasoning**

Develops K-12 teachers' geometrical reasoning and the ability to foster students' reasoning. Addresses transformation, measurement, classification, objects, imagery, formulas, and



investigation. Applicable to teaching students at all grade levels in line with the K-12 Common Core Standards. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 5840 - Math Education Independent Study**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **MTED 7030 - Theories Of Mathematics Learning**

Develops educators' knowledge of foundational theories and conceptual frameworks in mathematics education. MTED 5030 and 7030 are cross-listed. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MTED 7040 - Mathematics Teaching - Theory and Practice**

Develops educators' research-based understandings and practices of PreK-12 mathematics teaching and learning. MTED 5040 and 7040 are cross-listed. Repeatable. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **MTED 7050 - Critique Of Mathematics Education Research**

Develops educators' understanding of various research studies in mathematics education, including research focusing on mathematics teaching and learning, attending to students' mathematical reasoning, and teaching mathematics for social justice and equity. Increases educators' competence, confidence and enthusiasm in critiquing research. MTED 5050 and 7050 are cross-listed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 7060 - Developmental Pathways In Students' Mathematical Thinking**

Fosters educators' development of research-based ways of determining (a) what to look for, (b) how to look for, (c) how to synthesize and report on, and (d) how to incorporate in pedagogy data-grounded inferences about children's mathematical thinking. MTED 5060 and 7060 are cross-listed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTED 7840 - Math Education Independent Study**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

## **Mathematics**

### **MATH 1010 - Mathematics for the Liberal Arts**

Designed to give liberal arts students the skills required to understand and interpret quantitative information that they encounter in the news and in their studies, and to make

quantitatively-based decisions in their lives. Topics include a survey of logic and analysis of arguments, identifying fallacies in reasoning, working with numbers and units, linear and exponential relations and essentials of probability and statistics. The emphasis is on applications with case studies in economics, finance, environmental sciences, health, music and science. Note: This course assumes that students have knowledge equivalent to three years of high school mathematics (two years of algebra). Requisite: In order to promote student success, any student who has an ACT MATH score less than 19 (or equivalently an SAT MATH score less than 520) AND a H.S. GPA of less than 3.25 will be required to enroll in the one credit hour co-requisite workshop MATH 1011. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-MA1 **Semester Hours:** 3 to 3

### **MATH 1011 - Math for Liberal Arts Workshop**

Prepares students for college-level mathematics. Students receive one-on-one and small-group instruction on mathematics topics related to college level mathematics success. Coreq: MATH 1010. Term offered: fall, spring. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **MATH 1060 - Finite Mathematics**

This course is designed to introduce students to mathematics topics commonly encountered by business students. This course meets the universities CORE mathematics requirement. The topics include linear equations and inequalities, linear, quadratic, exponential and logarithmic functions, simple, compound and continuous interest, future and present value annuities, amortization, systems of equations, linear programming, logic, sets and probability. Graphing technology is used extensively and business applications are emphasized throughout. Terms offered: Fall and Spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 1070 - College Algebra for Business**

Covers the same mathematical topics as College Algebra, MATH 1110, but with business applications. Note: Graphics calculator required. Note: Students may not receive credit for this course if they have already received credit for MATH 1110 or MATH 1130. Note: 24 on ACT-Math, 560 on SAT-Math or above average performance in intermediate algebra, algebraic literacy or integrated math are strongly recommended as preparation for this course. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-MA1. **Semester Hours:** 3 to 3

### **MATH 1108 - Stretch College Algebra-Part 1**

This course is the first half of a two-semester sequence (consisting of MATH 1108 followed by MATH 1109). The two-semester course sequence is equivalent to MATH 1110 (College Algebra). The topics in algebra are designed for students who intend to take the calculus sequence. An in-depth study of functions, linear and quadratic equations, circles, inequalities, domain & range,

piecewise and transformation of functions, mathematical modeling and select other topics are explored. Desmos graphing technology is used extensively and students will review algebraic skills such as factoring and completing the square, graphing techniques and function properties where needed. Applications are emphasized. Note: No co-credit with MATH 1070, MATH 1110 or MATH 1130. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 1109 - Stretch College Algebra-Part 2**

This course is the second half of a two-semester sequence (consisting of MATH 1108 followed by MATH 1109). The two semester course sequence is equivalent to MATH 1110 (College Algebra). The topics in algebra are designed for students who intend to take the calculus sequence. Data scatter plots and curve fitting, solving equations, polynomial functions, rational functions, exponential and logarithmic functions and selected other topics are explored. Desmos graphing technology is used extensively and students enrolled in MATH 1109 will review algebraic skills such as solving linear and quadratic equations, factoring and completing the square, graphing techniques and function properties where needed. Applications are emphasized. Note: No co-credit with MATH 1070, MATH 1110 or MATH 1130. Prerequisite: MATH 1108 with a C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 1110 - College Algebra**

Topics in algebra designed for students who intend to take the calculus sequence. Functions, domains, ranges, graphs, data scatter plots and curve fitting, solving equations and systems of equations, polynomial, rational, exponential and logarithmic functions and other topics. Applications are emphasized. Note: Students may not receive credit for this course if they have already received credit for MATH 1070 or MATH 1130. Prereq: MATH 1109 or MATH 1070 or MATH 1110 or MATH 1120 or MATH 1130 or MATH 1401 with a C- or higher OR entry into the MA10 or MA30 or MA01 Student Group OR ALEKS PPL score 46-100. If you have any questions or concerns about this requisite, please notify [MATH.Placement@ucdenver.edu](mailto:MATH.Placement@ucdenver.edu). Term offered: fall, spring, summer. Max hours: 4 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-MA1. **Semester Hours:** 4 to 4

### **MATH 1111 - First Year Seminar**

Restriction: Restricted to Freshman level students. Term offered: Fall. Repeatable. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **MATH 1120 - College Trigonometry**

Topics in trigonometry, analytic geometry, and elementary functions designed for students who intend to take the calculus sequence. Angles and trigonometry functions of acute angles, analytic trigonometry, fundamental trigonometric functions and identities including hyperbolic trigonometry, parametric equations, and polar coordinate system. Graphic calculators and/or computer algebra systems are used extensively. Applications are emphasized. Prereq: MATH

1109 or MATH 1070 or MATH 1110 or MATH 1120 or MATH 1130 or MATH 1401 with a C- or higher OR entry into the MA30 or MA01 Student Group OR ALEKS PPL score 61-100. If you have any questions or concerns about this requisite, please notify [MATH.Placement@ucdenver.edu](mailto:MATH.Placement@ucdenver.edu). Students with a grade of B- or better in MATH 1110 or MATH 1070 pass the course at a much higher rate. No co-credit with MATH 1130. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-MA1. **Semester Hours:** 3 to 3

### **MATH 1130 - Precalculus Mathematics**

Condensed treatment of the topics in MATH 1110 and 1120. Prereq: : MATH 1120 or MATH 1130 or MATH 1401 with a C- or higher OR entry into the MA30 or MA01 Student Group OR ALEKS PPL score 61-100. If you have any questions or concerns about this requisite, please notify [MATH.Placement@ucdenver.edu](mailto:MATH.Placement@ucdenver.edu). No co-credit with MATH 1070, 1110 or 1120. Term offered: fall, spring, summer. Max hours: 4 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-MA1. **Semester Hours:** 4 to 4

### **MATH 1376 - Programming for Data Science**

The course provides an introduction to scientific computing using Python. Topics will include programming skills such as assignment, control statements, loops, vectorized operations, and parallel computing. Applications will focus on mathematical and data science topics such as optimization, data simulation, and model fitting. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 1401 - Calculus I**

First course of a three-semester sequence (MATH 1401, 2411, 2421) in calculus. Topics covered include limits, derivatives, applications of derivatives, and the definite integral. Note: No co-credit with MATH 1080. Prereq: MATH 1109 or MATH 1070 or MATH 1110 with a C- or higher and MATH 1120 with a C- or higher or MATH 1130 with a C- or higher or MATH 1401 with a C- or higher OR entry into the MA01 Student Group OR ALEKS PPL score 76-100. If you have any questions or concerns about this requisite, please notify [MATH.Placement@ucdenver.edu](mailto:MATH.Placement@ucdenver.edu). Max Hours: 4 Credits. **Semester Hours:** 4 to 4

### **MATH 1840 - Independent Study.**

Repeatable. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **MATH 2411 - Calculus II**

The second of a three-semester sequence (MATH 1401, 2411, 2421) in calculus. Topics covered include exponential, logarithmic, and trigonometric functions, techniques of integration,

indeterminate forms, improper integrals and infinite series. Prereq: C- or better in MATH 1401. Note: Students with a grade of B- or better in MATH 1401 pass this course at a much higher rate. Term offered: fall, spring, summer. Max hours: 4 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-MA1. **Semester Hours:** 4 to 4

### **MATH 2421 - Calculus III**

The third of a three-semester sequence in Calculus (MATH 1401, 2411 and 2421). Topics include vectors, vector-valued functions, partial differentiation, differentiation, multiple integration, and vector calculus. Prereq: C- or better in MATH 2411. Note: Students with a grade of B- or better in MATH 2411 pass this course at a much higher rate. Term offered: fall, spring, summer. Max hours: 4 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-MA1 **Semester Hours:** 4 to 4

### **MATH 2810 - Topics**

Topics in mathematics with various subtitles reflecting course content. Prereq: permission of instructor. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **MATH 2830 - Introductory Statistics**

Basic statistical concepts, summarizing data, probability concepts, distributions, confidence intervals, hypothesis testing. Note: This course assumes that students have knowledge equivalent to three years of high school mathematics (two years of algebra), intermediate algebra, or Algebraic Literacy at a Colorado Community College at the start of class. Students who have a grade of B- or better in one of these courses pass at a much higher rate. Term offered: fall, spring, summer. Requisite: In order to promote student success, any student who has an ACT MATH score less than 19 (or equivalently an SAT MATH score less than 520) AND a H.S. GPA of less than 3.25 will be required to enroll in the one credit hour co-requisite workshop MATH 2831. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-MA1. **Semester Hours:** 3 to 3

### **MATH 2831 - Introductory Statistics Workshop**

Prepares students for college-level mathematics. Students receive one-on-one and small-group instruction on mathematics topics related to college level mathematics success. Co-req: MATH 2830. Term offered: fall, spring. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **MATH 2939 - Internship**

Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Note: students must work with the Experiential Learning Center advising to complete a course contract and gain approval. Prereq: 15 hours of 2.75 GPA. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **MATH 3000 - Introduction to Abstract Mathematics**

Students learn to prove and critique proofs of theorems by studying elementary topics in abstract mathematics, including logic, sets, functions, equivalence relations and elementary combinatorics. Coreq: MATH 2421 or MATH 3191. Note: This course assumes that students have taken MATH 2411 or equivalent. Students who have a grade of B- or better in MATH 2411 pass at a much higher rate. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 3191 - Applied Linear Algebra**

Topics include systems of equations, Gaussian elimination with partial pivoting, LU--decomposition of matrices, matrix algebra, determinants, vector spaces, linear transformations, eigen values and applications. Note: No co-credit with MATH 3195. Prereq: C- or better in MATH 2411. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 3195 - Linear Algebra and Differential Equations**

Presents the essential ideas and methods of linear algebra and differential equations, emphasizing the connections between and the applications of both subjects. The course is designed for students in the sciences and engineering. Note: No co-credit with MATH 3200 and MATH 3191. Prerequisite: MATH 2411 with a C- or higher. Term offered: fall, spring, summer. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **MATH 3200 - Elementary Differential Equations**

First and second order differential equations, Laplace transforms, systems of equations, with an emphasis on modeling and applications. Note: No co-credit with MATH 3195. Prerequisite: MATH 2411 with a C- or higher, Co-requisite MATH 3191. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 3210 - Higher Geometry I**

Studies the foundations of modern geometry by examining axiomatic systems for various geometrics, with an emphasis on non-Euclidean hyperbolic geometry. Prereq: C- or better in MATH 3000. Cross-listed with MCKE 5210. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 3301 - Introduction to Optimization in Operations Research**

Introduces a mathematical approach for decision-making in practice based on optimization. Students will learn to model, analyze and solve a variety of problems from deterministic operations using both continuous and discrete mathematical programming algorithms and software. Note: this course assumes that students have taken MATH 3191 or MATH 3195 or equivalent. Students who have received a grade of B- or better in MATH 3191 or 3195 pass this course at a much higher rate. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 3302 - Simulation in Operations Research**

Elementary stochastic processes and standard nondeterministic operations research models solved by simulation: Markov chains, Poisson process, Monte Carlo and discrete-event simulation, queuing theory, and inventory models. Note: This course assumes that students have programming experience (e.g. MATLAB), and have taken MATH 3191 and MATH 3800 or 4810 or equivalent. Students who have a grade of B- or better in MATH 3191 and MATH 3800 or 4810 pass this course at a much higher rate. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 3376 - Data Wrangling & Visualization**

The course provides an introduction to obtaining, restructuring, and visualizing complex data sets. Students will learn to manipulate many data types, store data in a variety of structures, and construct static and dynamic plots in a variety of contexts. Students earning a B- or better in Math 1376 or 4387 are more likely to be successful in this course than students earning lower grades. Prereq: MATH 1376 or MATH 4387 with a C- or higher and MATH 2830 or MATH 3382 with a C- or higher. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 3382 - Statistical Theory**

Probability, random variables, properties of distributions, bootstrap methods, maximum likelihood and method of moments estimation, properties of estimators, classical methods for confidence intervals and hypothesis testing. Prereq: MATH 2421 with a C- or higher. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 3440 - Introduction to Symbolic Logic**

Covers truth functional and quantificational logic through polyadic first order predicate calculus and theory of identity. Attention is given to such problems in metatheory as proofs of the completeness and consistency of systems of logic. Cross-listed with PHIL 3440. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 3511 - Mathematics of Chemistry**

Multivariate functions, probability and statistics for chemistry, matrices and vectors, mathematics of reaction kinetics and symmetry point groups. Course covers mathematics

needed for CHEM 4511 and 4521. Can also be an elective for the mathematics minor. Prereq: MATH 2411, CHEM 2031 or CHEM 2081, CHEM 2061 or CHEM 2091. Term offered: fall. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **MATH 3800 - Probability and Statistics for Engineers**

Basic probability theory, discrete and continuous random variables, point and interval estimation, test of hypotheses, and simple linear regression. Note: no co-credit with MATH 4810. Note: This course assumes that students have taken MATH 2411 and have either previously taken MATH 2421 or are taking MATH 2421 the same semester as MATH 3800. Students who have a grade of B- or better in MATH 2411 pass this course at a much higher rate. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 3939 - Internship**

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Note: students must work with the Experiential Learning Center advising to complete a course contract and gain approval. Prereq: Junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **MATH 4010 - History of Mathematics**

A history of the development of mathematical techniques and ideas from early civilization to the present, including the inter-relationships of mathematics and sciences. Prereq: MATH 2411 with a C- or higher. Coreq: MATH 3000 or 3191. Cross-listed with MATH 5010. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4027 - Topics in Mathematics**

Special topics in mathematics will be covered; consult 'Schedule Planner' for current topics and prerequisites. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 3

### **MATH 4110 - Theory of Numbers**

Every other year. Topics include divisibility, prime numbers, congruencies, number theoretic functions, quadratic reciprocity, and special diophantine equations, with applications in engineering. Prereq: Grade of C- or better in MATH 3000. Note: Students who have a grade of B- or better in MATH 3000 pass this course at a much higher rate. Cross-listed with MATH 5110. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4140 - Introduction to Modern Algebra**

Studies the fundamental algebraic structures used in modern mathematics. Topics include groups, rings, fields and polynomials. Note: This course assumes that students have taken



MATH 3000 or equivalent and either MATH 3191 or MATH 3195. Students who have a grade of B- or better in these courses pass at a much higher rate. Cross-listed with MCKE 5140. Prereq: MATH 3000 with a C- or higher. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4310 - Introduction to Real Analysis I**

Calculus of one variable, the real number system, continuity, differentiation, integration theory, sequence and series. Prereq: Prereq: Grade of C- or better in MATH 2421 and 3000. Note: Students who have a grade of B- or better in MATH 2421 and 3000 pass this course at a much higher rate. Cross-listed with MCKE 5310. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4320 - Introduction to Real Analysis II**

Convergence, uniform convergence; Taylor's theorem; calculus of several variables including continuity, differentiation and integration; Picard's theorem in ordinary differential equations and Fourier series. Prereq: MATH 4310 with a C- or higher. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4387 - Applied Regression Analysis**

Topics include simple and multiple linear regression, model diagnostics and remediation, and model selection. Emphasis is on practical aspects and applications of linear models to the analysis of data in business, engineering and behavioral, biological and physical sciences. Prereq: Grade of C- (1.7) or better in MATH 3191 and in MATH 3800 or 4820 or 3382. Note: Students who have a grade of B- or better in MATH 3191, an A in MATH 3800 or a B- or better in MATH 4820 pass this course at a much higher rate. Cross-listed with MATH 5387. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4390 - Game Theory**

Zero-sum and non-zero-sum games; Nash equilibrium and the principle of indifference; Shapley value and other concepts of fair division; Evolutionary game theory, ESS, and evolutionary population dynamics. Applications in economics, business, and biology. Note: This course assumes that students have programming experience (e.g. MATLAB), and have taken MATH 2421, 3191 and 3200 or MATH 3195, MATH 3800 or 4810, or equivalent. Students who have a grade of B- or better in these courses pass this course at a much higher rate. Cross-listed with MATH 5390. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4394 - Experimental Designs**

Designs covered will include: completely randomized, complete block, split plot, incomplete block, factorial and fractional factorial designs. Additionally, power and study design for non-

experimental studies will be covered. Prereq: Grade of C- or better in MATH 4387 or 5387. Cross-listed with MATH 5394. Term offered: spring of even years. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MATH 4408 - Applied Graph Theory**

Introduces discrete structures and applications of graph theory to computer science, engineering, operations research, social science, and biology. Topics include connectivity, coloring, trees, Euler and Hamiltonian paths and circuits, matching and covering problems, shortest route and network flows. Prereq: MATH 2511 or CSCI 2511 or MATH 3000 with a C- or higher. Note: This course assumes that students have taken MATH/CSCI 2511 or MATH 3000. Students who have a grade of B- or better in MATH/CSCI 2511 or MATH 3000 pass this course at a much higher rate. Cross-listed with CSCI 4408 and MCKE 5408. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4409 - Applied Combinatorics**

Every other year. Major emphasis is on applied combinatorics and combinatorial algorithms, with applications in computer science and operations. Topics include general counting methods, generating functions, recurrence relations, inclusion-exclusion, and block designs. Prereq: MATH 3000 with a C- or higher. Note: This course assumes that students have taken MATH 3000. Students who have a grade of B- or better in MATH 3000 pass this course at a much higher rate. Cross-listed with MCKE 5409. Term offered: fall. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MATH 4450 - Complex Variables**

Infrequent. Topics include complex algebra, Cauchy-Riemann equations, Laurent expansions, theory of residues, complex integration, and introduction to conformal mapping. Note: This course assumes that students have taken MATH 2421 and MATH 3000. Students who have a grade of B- or better in MATH 2421 and MATH 3000 pass this course at a much higher rate. Term offered: spring of even years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4650 - Numerical Analysis I**

Methods and analysis of techniques used to resolve continuous mathematical problems on the computer. Solution of linear and nonlinear equations, interpolation and integration. Prereq: MATH 3191 or MATH 3195 with a C- or higher. Cross-listed with CSCI 4650, 5660, and MATH 5660. Term offered: fall, spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4660 - Numerical Analysis II**

Numerical differentiation and integration, numerical solution of ordinary differential equations, and numerical solutions of partial differential equations as time allows. Prereq: MATH 3191 or

MATH 3195 with a C- or higher and MATH 3200 with a C- or higher.. Cross-listed with MATH 5661, CSCI 4660 and 5661. Term offered: spring of odd years. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4733 - Partial Differential Equations**

Infrequent. Initial/Boundary value problems for first-order, wave, heat and Laplace Equations; maximum principles; Fourier Series and applications. Note: This course assumes that students have taken MATH 2421 and MATH 3200, and either have taken MATH 3000 or have experience with partial differential equations in engineering or physics. Students who have a grade of B- or better in MATH 2421 and MATH 3200 pass this course at a much higher rate. Cross-listed with MATH 5733. Term offered: spring of odd years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4779 - Math Clinic**

The clinic is intended to illustrate the applicability and utility of mathematical concepts. Research problems investigated originate from a variety of sources--industry, government agencies, educational institutions, or nonprofit organizations. Prereq: consult Schedule Planner or instructor. Cross-listed with MATH 5779. Term offered: fall, spring. Repeatable. Max Hours: 99 Credits. **Semester Hours:** 3 to 3

### **MATH 4791 - Continuous Modeling**

Every other year. Surveys mathematical problems that arise in natural sciences and engineering. Topics may include population models, epidemic models, mechanics, heat transfer and diffusion, tomography, pharmaco-kinetics, traffic flow, fractal models, wave phenomena, and natural resource management. Most models discussed are based on differential and integral equations. Emphasis is formulation and validation of models as well as methods of solution. Note: This course assumes that students have taken MATH 3191 and MATH 3200. Students who have a grade of B- or better in MATH 3191 and MATH 3200 pass this course at a much higher rate. Cross-listed with MATH 5791. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4792 - Probabilistic Modeling**

Every other year. Markov chains; Poisson processes, continuous time Markov chains, elementary topics in queuing theory, and some mathematical aspects of Monte Carlo simulation, including random variate generation, variance reduction, and output analysis. Note: This course assumes that students have taken MATH 4810 or 5310 and have some programming experience. Students who have a grade of B- or better in MATH 4810 or 5310 pass this course at a much higher rate. Cross-listed with MATH 5792. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4793 - Discrete Math Modeling**

Every other year. Focuses on the use of graph theory and combinatorics to solve problems in a wide variety of disciplines. Applications are selected from computer science, communication networks, economics, operations research, and the social, biological and environmental sciences. Note: This course assumes that students have taken MATH 3191 and MATH 4408. Students who have a grade of B- or better in MATH 3191 and MATH 4408 pass this course at a much higher rate. Cross-listed with MATH 5793. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4794 - Optimization Modeling**

Every other year. Principles of model formulation and analysis are developed by presenting a wide variety of applications, both for natural phenomena and social systems. Examples of optimization models to represent natural phenomena include principles of least time and energy. Examples in social systems include resource allocation, environmental control and land management. Specific applications vary, but are chosen to cover a wide scope that considers dichotomies, such as discrete vs. continuous, static vs. dynamic, and deterministic vs. stochastic. Some computer modeling language (like GAMS) is taught. Note: This course assumes that students have taken MATH 2421 and MATH 3191. Students who have a grade of B- or better in MATH 2421 and MATH 3191 pass this course at a much higher rate. Cross-listed with MATH 5794. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4810 - Probability**

Examines elementary theory of probability, including independence, conditional probability, and Bayes' theorem; random variables, expectations and probability distributions; joint and conditional distributions; functions of random variables; limit theorems, including the central limit theorem. Note: No co-credit with MATH 3800. Note: This course assumes that students have taken MATH 3191 or equivalent and have either previously taken MATH 2421 or are taking MATH 2421 the same semester as MATH 4810. Students who have a grade of B- or better in MATH 3191 pass this course at a much higher rate. Cross-listed with MATH 5310. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4820 - Introduction to Mathematical Statistics**

Sampling distributions, maximum likelihood and method of moments estimation, properties of estimators, classical methods for confidence intervals and hypothesis testing, simple linear regression. Prereq: Grade of C- or better in MATH 3800 or MATH 4810 (preferred). Note: Students who have a grade of A in MATH 3800 or a B- or better in MATH 4810 pass this course at a much higher rate. Cross-listed with MATH 5320. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4830 - Applied Statistics**

Review of estimation, confidence intervals and hypothesis testing; Anova; categorical data analysis; non-parametric tests; linear and logistic regression. No co-credit with MATH 4387 or 5387 and doesn't count for Math degrees. Cross-listed with MATH 5830. Prereq: MATH 2830 with a C- or higher. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 4840 - Independent Study**

Variable credit depending on the student's needs. Offered for the advanced student who desires to pursue a specific topic in considerable depth. Note: Supervision by a full-time faculty member is necessary, and the dean's office must concur. Students may register for this course more than once with departmental approval. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **MATH 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **MATH 5010 - History of Mathematics**

A history of the development of mathematical techniques and ideas from early civilization to the present, including the inter-relationships of mathematics and sciences. Note: this course assumes that students have mathematical knowledge equivalent to MATH 1401. Prereq: Graduate standing. Not open to students who have had MATH 4010. No credit for applied math graduate students. Cross-listed with MATH 4010. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5012 - An Advanced Perspective on Number and Operation**

Advanced study of number and operation, including why the various procedures from arithmetic work and connections to algebraic reasoning. Focuses on using rigorous mathematical reasoning and multiple representations to explain concepts. Note: Does not count toward graduate degrees in applied mathematics. Note: this course assumes that students have taken MATH 3000 or an equivalent course. Prereq: Graduate standing. Cross-listed with MATH 4012. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **MATH 5013 - An Inquiry-based Approach to Geometry**

An inquiry-based approach to middle-level and Euclidean geometry. Topics include: polygons and the angle relationships, constructions, Pythagorean theorem and perimeter, area and volume, similarity and congruence, circles. Note: Does not count toward a graduate degree in applied mathematics. Note: this course assumes that students have taken MATH 3000 or an

equivalent course. Prereq: Graduate standing. Cross-listed with MATH 4013. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **MATH 5014 - Statistical Knowledge for Teaching**

A problem-based statistics seminar aimed at secondary teachers. Topics include: the central limit theorem, the law of large numbers, probability, measures of central tendency and variability, sampling distributions, regression, and hypothesis testing. Note: Does not count toward a graduate degree in applied mathematics. Note: this course assumes that students have taken MATH 3800 or an equivalent course. Prereq: Graduate standing. Cross-listed with MATH 4014. Max hours: 1 Credits. **Semester Hours:** 1 to 1

### **MATH 5015 - Capstone Course for Secondary Teachers**

High school mathematics from an advanced perspective: analyses of alternative definitions, extensions and generalizations of familiar theorems; discussions of historical contexts in which concepts arose; applications of mathematics. Note: Does not count toward a graduate degree in applied mathematics. Note: this course assumes that students have taken MATH 3210, 4310 and 3140 or equivalent. Prereq: Graduate standing. Cross-listed with MATH 4015. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5016 - RM-MSMSP Research Experience for Teachers - Math Cohort**

The Research Experience for Teachers (RET) program is a five-week research exploration in which twelve RM-MSMSP teachers will raise their level of relevant mathematics understanding by engaging in a "hands on" workshop, transforming what they have learned into new curricular materials that will improve the mathematics abilities of their students and hopefully stimulate them to consider a STEM career. Note: Credit may not apply toward any CLAS degree. Max hours: 6 Credits. **Semester Hours:** 1 to 6

### **MATH 5017 - Topics in Mathematics for Teachers**

Topics vary from semester to semester. Designed for professional mathematics teachers. Note: This course will not count toward a degree in applied mathematics. Prereq: permission of instructor. Repeatable. Max Hours: 50 Credits. **Semester Hours:** 0.3 to 50

### **MATH 5027 - Topics in Applied Mathematics**

Selected topics in mathematical problems arising from various applied fields such as mechanics, electromagnetic theory, economics and biological sciences. Prereq: Graduate standing in Applied Mathematics, or permission of the instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5070 - Applied Analysis**

Metric spaces, uniform convergence, elements of Banach spaces, elements of functions of complex variable. Problem solving and independent proof writing. Review of selected advanced topics in analysis for the PhD preliminary examination. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of two semesters of undergraduate real analysis (e.g., MATH 4310 and MATH 4320). Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5110 - Theory of Numbers**

Every other year. Topics include divisibility, prime numbers, congruences, number theoretic functions, quadratic reciprocity, and special diophantine equations, with applications in engineering. Prereq: Graduate Standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate-level course in mathematical proof (e.g. MATH 3000). Cross-listed with MATH 4110. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5135 - Functions of a Complex Variable**

Infrequent. The complex plane, infinite series and products, elementary special functions, Cauchy-Riemann equations, conformal mapping, complex integration, Cauchy integral theory, and residue theory. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have mathematical knowledge equivalent to two semesters of undergraduate-level real analysis (e.g. MATH 4310, MATH 4320) or to a semester of graduate-level real analysis (e.g., MATH 5070). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5198 - Mathematics for Bioscientists**

Infrequent. Develops mathematical reasoning: introduces linear algebra, discrete structures, graph theory, probability, and differential equations, using applications to molecular biology. Note: No credit for mathematics or engineering students. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have mathematical knowledge equivalent to two semesters of calculus (e.g., MATH 1401, MATH 2411). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5310 - Probability**

Examines elementary theory of probability, including independence, conditional probability, and Bayes' theorem; random variables, expectations and probability distributions; joint and conditional distributions; functions of random variables; limit theorems, including the central limit theorem. Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of differential and integral calculus (e.g., MATH 2411). Cross-listed with MATH 4810. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5320 - Introduction to Mathematical Statistics**

Sampling distributions, maximum likelihood and method of moments estimation, properties of estimators, classical methods for confidence intervals and hypothesis testing, simple linear regression. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of an undergraduate-level course in probability (e.g., MATH 3800 or 4810). Cross-listed with MATH 4820. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5350 - Mathematical Theory of Interest**

Rates of interest, term structure of interest rates, force of interest, yield rate, principal, equation of value, annuity, perpetuity, stocks, bonds, other financial instruments. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate-level course in probability (e.g., MATH 4810). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5351 - Actuarial Models**

Severity models, frequency models, aggregate models, risk measures, ruin theory, construction and selection of empirical models, credibility, simulation. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of undergraduate-level courses in probability and statistics (e.g. MATH 4810, MATH 4820, MATH 3382). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5387 - Applied Regression Analysis**

Topics include simple and multiple linear regression, model diagnostics and remediation, and model selection. Emphasis is on practical aspects and applications of linear models to the analysis of data in business, engineering and behavioral, biological and physical sciences. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of an undergraduate-level course in statistics (e.g., MATH 4820). No co-credit with MATH 4830/5830. Cross-listed with MATH 4387. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5390 - Game Theory**

Zero-sum and non-zero-sum games; Nash equilibrium and the principle of indifference; Shapley value and other concepts of fair division; Evolutionary game theory, ESS, and evolutionary population dynamics. Applications in economics, business, and biology. Note: this course assumes that students have the equivalent of MATH 2421, 3191 and 3800 or 4810. Prereq: Graduate standing in Applied Mathematics. Cross-listed with MATH 4390. Term offered: spring of odd years. Max hours: 3 Credits. **Semester Hours:** 3 to 3



### **MATH 5394 - Experimental Designs**

Designs covered will include: completely randomized, complete block, split plot, incomplete block, factorial and fractional factorial designs. Additionally, power and study design for non-experimental studies will be covered. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of an undergraduate-level course in regression analysis (e.g., MATH 4387). Cross-listed with MATH 4394. Term offered: spring of even years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5410 - Modern Cryptology**

Every other year. Deals with the mathematics that underlies modern cryptology. Topics include: classical cryptology, public and private key cryptosystems, secret sharing schemes, authentication schemes, linear feedback shift registers, discrete logarithm and elliptic curve-based schemes. Note: this course assumes that students have the equivalent of a course in linear algebra (e.g., MATH 3191). Prereq: Graduate standing in Applied Mathematics. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5432 - Computational Graph Theory**

Infrequent. Algorithmic techniques in graph theory and other discrete mathematics areas. Typical topics include: branch-bound algorithms, matching, colorings, domination, min-plus algebra, simulated annealing and related heuristics, NP-completeness theory. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate-level course in graph theory (e.g., MATH 4408). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5446 - Theory of Automata**

Infrequent. Studies the relationships between classes of formal languages (regular, context-free, context-sensitive, phrase-structure) and classes of automata (finite-state, pushdown, Turing machines). Additional topics include decidability and computability issues. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate-level course in abstract algebra (e.g., MATH 4140). Cross-listed with CSCI 5446. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5490 - Network Flows**

Every other year. Begins with the classical min-cost flow problem, defined on an ordinary network. Other problems, such as shortest path, are also shown in this class. Both theory and algorithms are presented. Extensions include generalized networks, nonlinear costs, fixed charges, multi-commodity flows and additional applications, such as in communications

networks. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Term offered: spring of even years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5576 - Mathematical Foundations of Artificial Intelligence I**

Infrequent. A fundamentals course that complements other approaches, such as in engineering, psychology, and business administration. Here the emphasis is on the mathematical foundations. Topics include logical inference, problem solving, heuristic search, neural nets, analogical reasoning and learning. Models and paradigms also consider different measures of uncertainty. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate course in data structures (e.g., CSCI 2511) and a course in linear algebra (e.g., MATH 3191). Cross-listed with MATH 4576. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5593 - Linear Programming**

A linear program is an optimization problem that seeks to minimize or maximize a linear function subject to a system of linear inequalities and equations. This course begins with examples of linear programs and variations in their representations. Basic theoretical foundations covered include polyhedra, convexity, linear inequalities and duality. Two classes of solution algorithms are given: simplex methods and interior point methods. The primary emphasis of this course is on mathematical foundations, and applications are used to illustrate the main results. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a course in linear algebra (e.g., MATH 3191). Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5610 - Computational Biology**

Every other year. Basic introduction and mathematical foundations. Topics include comparative genomics; proteomics; phylogeny; dynamic programming and sequence alignment; gene expression arrays and clustering; Bayesian networks; structure prediction and hidden Markov models. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have some programming experience or the equivalent of a programming course (e.g., CSCI 1410) and linear algebra (e.g., MATH 3191 or 3195). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5660 - Numerical Analysis I**

Methods and analysis of techniques used to resolve continuous mathematical problems on the computer. Solution of linear and nonlinear equations, interpolation and integration. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of differential and integral calculus (e.g., MATH 2411) and linear algebra (e.g., MATH 3191 or 3195). Programming experience is strongly

recommended. Cross-listed with CSCI 4650, 5660, and MATH 4650. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5661 - Numerical Analysis II**

Numerical differentiation and integration, numerical solution of ordinary differential equations, and numerical solutions of partial differential equations as time allows. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of linear algebra and differential equations (e.g., MATH 3195 or both MATH 3191 and 3200) and programming experience or a first course on numerical analysis (e.g., MATH 4650). Cross-listed with MATH 4660, CSCI 4660 and 5661. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5674 - Parallel Computing and Architectures**

Infrequent. Examines a range of topics involved in using parallel operations to improve computational performance. Parallel architectures, parallel algorithms, parallel programming languages, interconnection networks, and their relation to specific computer architectures. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a course in numerical analysis (e.g., MATH 4650). Cross-listed with MATH 4674. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5718 - Applied Linear Algebra**

Topics include: Vector spaces, practical solution of systems of equations, projections, eigenvalues and eigenvectors, unitary transformations, Schur QR, singular value decompositions, similarity transformations, Jordan forms, and positive definite matrices. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate-level course in linear algebra (e.g., MATH 3191). Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5733 - Partial Differential Equations**

Infrequent. Initial/Boundary value problems for first-order, wave, heat and Laplace Equations; maximum principles; Fourier Series and applications. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate sequence in calculus (e.g., through MATH 2421) and differential equations (e.g., MATH 3200 or 3195). Cross-listed with MATH 4733. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5779 - Math Clinic**

The clinic is intended to illustrate the applicability and utility of mathematical concepts. Research problems investigated originate from a variety of sources--industry, government

agencies, educational institutions, or nonprofit organizations. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Cross-listed with MATH 4779. Term offered: fall, spring. Repeatable. Max Hours: 99 Credits. **Semester Hours:** 3 to 3

### **MATH 5791 - Continuous Modeling**

Every other year. Surveys mathematical problems that arise in natural sciences and engineering. Topics may include population models, epidemic models, mechanics, heat transfer and diffusion, tomography, pharmaco-kinetics, traffic flow, fractal models, wave phenomena, and natural resource management. Most models discussed are based on differential and integral equations. Emphasis is formulation and validation of models as well as methods of solution. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of undergraduate-level courses in differential equations and linear algebra (e.g., MATH 3200 and 3191). Cross-listed with MATH 4791. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5792 - Probabilistic Modeling**

Every other year. Markov chains; Poisson processes, continuous time Markov chains, elementary topics in queuing theory, and some mathematical aspects of Monte Carlo simulation, including random variate generation, variance reduction, and output analysis. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate-level course in probability (e.g., MATH 4810) and some programming experience. Cross-listed with MATH 4792. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5793 - Discrete Math Modeling**

Every other year. Focuses on the use of graph theory and combinatorics to solve problems in a wide variety of disciplines. Applications are selected from computer science, communication networks, economics, operations research, and the social, biological and environmental sciences. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate course in linear algebra (e.g., MATH 3191) and graph theory (e.g., MATH 4408). Cross-listed with MATH 4793. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5794 - Optimization Modeling**

Every other year. Principles of model formulation and analysis are developed by presenting a wide variety of applications, both for natural phenomena and social systems. Examples of optimization models to represent natural phenomena include principles of least time and energy. Examples in social systems include resource allocation, environmental control and land management. Specific applications vary, but are chosen to cover a wide scope that considers dichotomies, such as discrete vs. continuous, static vs. dynamic, and deterministic vs.

stochastic. Some computer modeling language (like GAMS) is taught. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. : This course assumes that students have the equivalent of a sequence in calculus (e.g., through MATH 2421) and linear algebra (e.g., MATH 3191). Cross-listed with MATH 4794. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5830 - Applied Statistics**

Review of estimation, confidence intervals and hypothesis testing; ANOVA; categorical data analysis; non-parametric tests; linear and logistic regression. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Note: This course assumes that students have the equivalent of an introductory course in statistics (e.g., MATH 2830). No co-credit with MATH 4387 or 5387 and doesn't count for Math degrees. Cross-listed with MATH 4830. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 5840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permission. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **MATH 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **MATH 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **MATH 5950 - Master's Thesis**

Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

### **MATH 5960 - Master's Project**

Note: Credit hours for this course will not count toward a graduate degree in Applied Mathematics. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

### **MATH 6023 - Topics in Discrete Math**

Topics may include graph theory, combinatorics, matroid theory, combinatorial matrix theory, finite geometry, design theory, and discrete algorithms. Note: Since topic varies by semester, students may register for this course more than once. Note: students should obtain permission from the instructor prior to enrolling in this course. Prereq: Graduate standing in Applied Mathematics. Repeatable. Max Hours: 99 Credits. **Semester Hours:** 3 to 3

### **MATH 6101 - Uncertainty Quantification**

The field of uncertainty quantification is evolving rapidly due to increasing emphasis on models of physical and biological systems that have quantified uncertainties for large-scale applications, novel algorithm development, and new computational architectures that facilitate implementation of these algorithms. In this course, we develop the basic concepts, theory, and algorithms necessary to quantify input and response uncertainties for a variety of simulation models. The topics will include concepts from probability and statistics, parameter selection techniques, frequentist and Bayesian model calibration, propagation of uncertainties, quantification of model discrepancy, surrogate model construction, and local and global sensitivity analysis. Note: A basic knowledge of probability, linear algebra, ordinary and partial differential equations, and introductory numerical analysis techniques is assumed. Coursework will typically consist of projects. Prereq: Graduate standing in Applied Mathematics or Statistics. AMENMS/PHD/STAT-MS. Recommended preparation MATH 5070, MATH 5718, MATH 5660, MATH 5733. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 6131 - Real Analysis**

Every other year. Lebesgue measure and integration, general measure and integration theory, Radon-Nikodym Theorem, Fubini Theorem. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a two semester course in undergraduate analysis or advanced calculus (e.g. MATH 4310 and 4320) or introductory graduate-level coursework in analysis (e.g. MATH 5070). Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 6330 - Workshop in Statistical Consulting**

Students participate as consultants in a drop-in consulting service operated by the department. Seminars provide students with supervised experience in short term statistical consulting. Note: Since problems vary each semester, students may register for this course more than once. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-

MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of graduate-level coursework in regression analysis (e.g. MATH 5387). Term offered: fall. Repeatable. Max Hours: 99 Credits. **Semester Hours:** 3 to 3

### **MATH 6360 - Exploratory Data Analysis**

Every other year. Philosophy and techniques associated with exploratory (vs. confirmatory) data analysis, both as originally presented (John Tukey) and current computer-based implementations. Graphical displays, robust-resistant methods (lines, two-way fits), diagnostic plots, standardization. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have prior coursework in statistics. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 6376 - Statistical Computing**

Computationally-intensive methods in statistics, including random number generation and Monte Carlo methods, data partitioning and re-sampling, numerical and graphical methods, nonparametric function estimation, statistical models and data mining methodology, analysis of large data sets. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have prior coursework in statistics (e.g. MATH 4820 or 4830 or 3382) and regression analysis (e.g. MATH 4387). Cross-listed with MATH 7376. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 6380 - Stochastic Processes**

Every other year. Markov processes in discrete and continuous time, renewal theory, martingales, Brownian motion, branching processes, and stationary processes. Applications include queuing theory, performance evaluation of computer and communication systems and finance. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of undergraduate-level coursework in linear algebra (e.g. MATH 3191) and ordinary differential equations (e.g. MATH 3200), along with undergraduate-level coursework in probability (e.g. MATH 4810). Term offered: fall of odd years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 6384 - Spatial and Functional Data Analysis**

This course will cover various statistical methods for spatial and functional data. This will include quantifying spatial dependence and making predictions for areal and geostatistical spatial data, as well as smoothing, aligning, and principal components for functional data. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Term offered: fall of odd years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MATH 6388 - Statistical and Machine Learning**

This course covers a variety of statistical and machine learning methods. Both supervised and unsupervised methods are covered with an emphasis on model training and error estimation. Topics include penalized regression, principal components, k-nearest neighbors, clustering, and neural networks. Additional higher-level topics such as random forests, support vector machines, and boosting are also covered as time permits. Students will gain exposure to high performance computing by working on a Linux cluster. Prereq: Graduate standing in Statistics or Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in regression analysis (e.g. MATH 5387). Term offered: fall of odd years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MATH 6395 - Multivariate Methods**

Every other year. Multivariate distributions, hypothesis testing and estimation. Multivariate analysis of variance, discriminant analysis, multidimensional scaling, factor analysis, principal components. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of graduate-level coursework in regression analysis (e.g. MATH 5387). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **MATH 6398 - Calculus of Variations and Optimal Control**

Infrequent. Standard variational problems (geodesic, time-of-transit, isoperimetric, surface, area), Euler-Lagrange equations, variational principles in mechanics, optimal control problems, necessary conditions for optimality, Pontryagin principle. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a two semester course in undergraduate analysis or advanced calculus (e.g. MATH 4310 and 4320) or introductory graduate-level coursework in analysis (e.g. MATH 5070). Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MATH 6404 - Applied Graph Theory**

Every other year. Emphasis on graph theory. Topics will include trees, digraphs and networks, intersection graphs, coloring, clique coverings, distance, paths and cycles. Topics are motivated by applications. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MATH 6595 - Computational Methods in Nonlinear Programming**

Every other year. Introduces fundamental algorithms and theory for nonlinear optimization problems. Topics include Newton, quasi-Newton and conjugate direction methods; line search and trust-region methods; active set, penalty and barrier methods for constrained optimization; convergence analysis and duality theory. Prereq: Graduate standing in Applied Mathematics or



permission of the instructor. Note: This course assumes that students have the equivalent of a two semester course in undergraduate analysis (e.g. MATH 4310 and 4320) and graduate-level coursework in linear algebra (e.g. MATH 5718). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 6653 - Introduction to Finite Element Methods**

Every other year. The Finite Element Method (FEM) is introduced as a generic tool for the approximation of partial differential equations that model engineering and physics problems of interest. Elliptic, hyperbolic, and parabolic equations are solved with FEM. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in numerical analysis (e.g. MATH 5660). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 6735 - Continuum Mechanics**

Every other year. Indicical notation. Eulerian and Lagrangian coordinates. Deformation, strain, strain rate, stress. Conservation of mass, momentum, and energy. Exploitation of entropy production inequality to obtain constitutive equations for elastic, viscous, visco elastic, plastic, or porous materials. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of undergraduate-level coursework in linear algebra (e.g. MATH 3191) and ordinary differential equations (e.g. MATH 3200). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 6840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permission. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **MATH 7101 - Topology**

Every other year. Topological spaces, compactness, separation properties and connectedness. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a two semester undergraduate sequence in analysis or advanced calculus (e.g. MATH 4310 and 4320) or a graduate-level course in analysis (e.g. MATH 5070). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7132 - Functional Analysis**

Every other year. Linear metric and topological spaces, duality, weak topology, spaces of functions, linear operators, compact operators, elements of spectral theory, and operator calculus. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate level coursework in real analysis (e.g. MATH 6131). Term offered: spring of odd years. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MATH 7376 - Statistical Computing**

Computationally-intensive methods in statistics, including random number generation and Monte Carlo methods, data partitioning and re-sampling, numerical and graphical methods, nonparametric function estimation, statistical models and data mining methodology, analysis of large data sets. Note: This course assumes that students have prior coursework in statistics (e.g. MATH 4820 or 4830 or 3382) and regression analysis (e.g. MATH 4387). Cross-listed with MATH 6376. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission.

AMEN-MS/PHD/STAT-MS. Cross-listed with MATH 6376. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7381 - Mathematical Statistics I**

Every other year. Mathematical theory of statistics. Parametric inference: discrete and continuous distributions, methods of parameter estimation, confidence intervals. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of undergraduate-level coursework in linear algebra (e.g. MATH 3191) and statistics (MATH 5320). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7382 - Mathematical Statistics II**

Every other year. (Continuation of MATH 7381.) Hypothesis testing, robust estimation, tolerance intervals, nonparametric inference, sequential methods. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of advanced graduate level coursework in mathematical statistics (e.g. MATH 7381). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7384 - Mathematical Probability**

Every other year. Measurable spaces, probability measures, random variables, conditional expectations and martingales. Convergence in probability, almost sure convergence, convergence in distribution, limit theorems (law of large numbers, central limit theorem, laws of iterated logarithm). Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of undergraduate-level coursework in probability (e.g. MATH 4810) and graduate-level coursework in analysis (e.g. MATH 5070 or 6131). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7385 - Stochastic Differential Equations**

Brownian motion, Ito integral, Ito formula, Dynkin's formula, stochastic optimal control, boundary value problems, Girsanov theorem, mathematical finance, optimal stopping. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in mathematical probability (e.g. MATH 7384). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7386 - Monte Carlo Methods**

This course introduces Monte Carlo integration, variance reduction methods, quasi-Monte Carlo, Markov chain Monte Carlo, Metropolis-Hastings algorithm, Gibbs sampler, simulated annealing, expectation-maximization algorithm, sequential Monte Carlo methods. Prereq: Graduate standing in Applied Mathematics or Statistics. AMENMS/PHD/STAT-MS. Recommended preparation: MATH 5310 and MATH 5320. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7393 - Bayesian Statistics**

Prior and posterior distributions, conjugate models, single and multiparameter models, hierarchical models, numerical methods for evaluating posteriors, Monte Carlo methods, and Markov chain Monte Carlo. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Programming experience is strongly recommended. Term offered: spring of odd years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7397 - Nonparametric Statistics**

Every three years. Statistical inference without strong model assumptions. Hypothesis testing and estimation using permutations and ranks, analysis of variance, and nonparametric model fitting. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7405 - Advanced Graph Theory**

Continuation of MATH 6404. Topics to be covered include: trees and optimization, encoding and embedding of graphs, generalized colorings and applications, perfect graphs, extremal problems, substructures, connectedness and cycles. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in graph theory (e.g. MATH 6404). Term offered: spring of even years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7409 - Applied Combinatorics**

Every other year. Emphasis is on enumerative combinatorics. Topics include multinomial coefficients, generating functions, SDRs, Polya's enumeration theory, pigeon-hole principle, inclusion/exclusion and Moebius inversion of finite posets. Topics may also include introduction to designs and finite geometry. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7410 - Combinatorial Structures**

Every other year. Finite combinatorial structures; existence, construction and applications. Topics include Latin squares, Hadamard matrices, block designs, finite geometries and extremal and non-constructive combinatorics. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in combinatorics (e.g. MATH 7409). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7413 - Modern Algebra I**

Every other year. Groups, rings and ideals, integral domains. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of undergraduate level coursework in abstract algebra (e.g. MATH 4140). It is recommended that students take MATH 5718 during the same semester as MATH 7413. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7414 - Modern Algebra II**

Every other year. Field theory, Galois theory, Modules over rings, especially over integral domains. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear algebra (e.g. MATH 5718) and abstract algebra (e.g. MATH 7413). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7419 - Mathematical Coding Theory**

Error correcting codes are used to recapture information that has been distorted in some transmission process. Various coding schemes use block codes obtained from algebraic, geometric and combinatorial structures. Topics include: fundamentals, linear, Reed-Muller, Golay, cyclic and BCH codes. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear algebra (e.g. MATH 5718). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7421 - Projective Geometry**

Every other year. Synthetic and algebraic development of projective spaces. Collineation groups, representation theorems, quadratic sets and applications. Emphasis is on finite

projective spaces. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear algebra (e.g. MATH 5718) and combinatorics (e.g. MATH 7409). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7593 - Advanced Linear Programming**

Every three years. A Ph.D. level course that goes deeper into linear programming, starting from where a graduate-level course (5593) ends. Topics include advanced sensitivity analysis, sparse matrix techniques, and special structures. Additional topics, which vary, include deeper analysis of algorithms, principles of model formulation and solution analysis. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear programming (e.g. MATH 5593). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7594 - Integer Programming**

Every three years. A Ph.D. level course that uses linear programming (5593), especially polyhedral theory, to introduce concepts of valid inequalities and superadditivity. Early group-theoretic methods by Gomory and Chvatal's rounding function are put into modern context, including their role in algorithm design and analysis. Duality theory and relaxation methods are presented for general foundation and analyzed for particular problem classes. Among the special problems considered are knapsack, covering, partitioning, packing, fix-charge, traveling salesman, generalized assignment matchings. Matroids are introduced and some greedy algorithms are analyzed. Additional topics, which vary, include representability theory, heuristic search and complexity analysis. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear programming (e.g. MATH 5593). Term offered: spring of odd years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7595 - Advanced Nonlinear Programming**

Every three years. Focuses primarily on the fundamental theory of nonlinear programming. Topics include convex analysis, optimality criteria, Lagrangian and conjugate duality, stability and sensitivity analysis. Other topics vary depending on the research interests of the instructor. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework addressing computational methods in nonlinear programming (e.g. MATH 6595). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7663 - Finite Difference Methods for Partial Differential Equations**

Every other year. Consistency, stability, and convergence for difference schemes. Derivations based on Taylor series and finite series. Methods for parabolic and hyperbolic initial value

problems and initial-boundary-value problems, elliptic boundary-value problems, some nonlinear problems. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in numerical analysis (e.g. MATH 5070) and partial differential equations (e.g. MATH 5733). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7665 - Numerical Linear Algebra**

Every other year. Solution of linear equations, eigenvector and eigenvalue calculation, matrix error analysis, orthogonal transformation, iterative methods. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in numerical analysis (e.g. MATH 5660) and linear algebra (e.g. MATH 5718). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7667 - Introduction to Approximation Theory**

Every other year. Linear normed and Banach spaces, convexity, existence and uniqueness of best approximations, least square approximation and orthogonal polynomials, Chebyshev approximation by polynomials and other related families, splines. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in analysis (e.g. MATH 5070) and linear algebra (e.g. MATH 5718). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 7821 - Topics in Projective Geometry**

Infrequent. Advanced topics in projective geometry. Topics may include finite projective planes, free projective planes, derivation, collineation groups, higher dimensional projective spaces, ovals and ovoids. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in projective geometry (e.g. MATH 7821). Repeatable. Max Hours: 48 Credits. **Semester Hours:** 3 to 3

### **MATH 7822 - Topics in Linear Algebra**

Infrequent. Topics may include canonical forms, bilinear and quadratic forms, and combinatorial matrix theory. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear algebra (e.g. MATH 5718). Repeatable. Max Hours: 48 Credits. **Semester Hours:** 3 to 3

### **MATH 7823 - Topics in Discrete Math**

Infrequent. Advanced topics in discrete mathematics; will change from semester to semester. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note:

Students should contact the course instructor to determine the course focus, and to determine if any prior undergraduate- or graduate-level coursework is assumed. Repeatable. Max Hours: 48 Credits. **Semester Hours:** 3 to 3

### **MATH 7824 - Topics in Computational Mathematics**

Infrequent. Topics include methods for differential equations, numerical optimization, approximation theory, inverse problems, and Fourier analysis. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: Students should contact the course instructor to determine the course focus, and to determine if any prior undergraduate- or graduate-level coursework is assumed. Repeatable. Max Hours: 48 Credits. **Semester Hours:** 3 to 3

### **MATH 7825 - Topics in Optimization**

Infrequent. Some topics are extensions of those introduced in MATH 6595, while other topics are new. Examples of topics are: duality, stability, sensitivity, consistency, redundancy, principles of optimality, control theory, calculus of various global (non-convex) optimization and model reformulation. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: Students should contact the course instructor to determine the course focus, and to determine if any prior undergraduate- or graduate-level coursework is assumed. Repeatable. Max Hours: 48 Credits. **Semester Hours:** 3 to 3

### **MATH 7826 - Topics in Probability and Statistics**

Infrequent. Topics may include generalized linear models, information theory, robust methods, spatial statistics, sequential analysis, Monte Carlo methods, queuing theory. Note: Since topics vary each semester, students may register for this course more than once. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: Students should contact the course instructor to determine the course focus, and to determine if any prior undergraduate- or graduate-level coursework is assumed. Repeatable. Max Hours: 48 Credits. **Semester Hours:** 3 to 3

### **MATH 7827 - Topics in Applied Mathematics**

Infrequent. Topics include problems in differential equations, optimization, mathematical modeling, Fourier analysis and approximation theory. Note: Since topics vary each semester, students may register for this course more than once. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Repeatable. Max Hours: 48 Credits. **Semester Hours:** 3 to 3

### **MATH 7840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permission. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **MATH 7921 - Readings in Mathematics**

Annual. Seven readings courses are offered regularly primarily for Ph.D. students at the research level in the designated fields. The seminar format requires significant student participation. Prereq: permission of instructor. Repeatable. Max Hours: 99 Credits. **Semester Hours:** 1 to 1

### **MATH 7922 - Rdgs:Math Fndts-Cmptr Sc**

Repeatable. Max Hours: 99 Credits. **Semester Hours:** 1 to 1

### **MATH 7923 - Readings: Discrete Mathematics**

Repeatable. Max Hours: 99 Credits. **Semester Hours:** 1 to 1

### **MATH 7924 - Rdgs:Comp Mathematics**

Repeatable. Max Hours: 99 Credits. **Semester Hours:** 1 to 1

### **MATH 7925 - Readings: Optimization**

Repeatable. Max Hours: 99 Credits. **Semester Hours:** 1 to 1

### **MATH 7926 - Rdgs:Applied Prob/Stats**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permission. Repeatable. Max Hours: 99 Credits. **Semester Hours:** 1 to 1

### **MATH 7927 - Rdgs:Comp/Math Biology**

Max hours: 1 Credits. **Semester Hours:** 1 to 1

### **MATH 8660 - Mathematical Foundations of Finite Element Methods**



Every other year. Theoretical foundations of finite element methods for elliptic boundary value problems, Sobolev spaces, interpolations of Sobolev spaces, variational formulation of elliptic boundary-value problems, basic error, estimates, applications to elasticity, practical aspects of finite element methods. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in finite element methods (e.g. MATH 6653) or equivalent programming experience, and graduate-level coursework in analysis or functional analysis (e.g. MATH 6131 or MATH 7132). Term offered: spring of odd years. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 8664 - Iterative Methods in Numerical Linear Algebra**

Every other year. Preconditioned iterative methods for linear systems and eigen problems, conjugate gradients, multigrid and domain decomposition. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in numerical analysis (e.g. MATH 5660) and numerical linear algebra (e.g. MATH 7665). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MATH 8990 - Doctoral Dissertation**

Only for students working on their Ph.D. research. Repeatable. Max hours: 50 Credits. **Semester Hours:** 1 to 10

## **Mechanical Engineering**

### **MECH 1025 - CAD and Graphics for Mechanical Engineering**

Introduction to 3-D computer-aided design software, solid modeling, industry-standard engineering drawing practices, and engineering graphics. Applications to mechanical engineering. Prereq: High School Geometry and Algebra. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 1045 - Manufacturing Processes Design**

Basic manufacturing background will be provided to engineering students in order to: (1) apply manufacturing specifications to the design of mechanical devices, and (2) communicate with technical personnel in a production environment. Topics cover metal casting, bulk and sheet metal forming, material removal and joining and fastening processes. Prereq: MECH 1025 or CVEN 1025 with a C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 1208 - Special Topics**

Subject matter to be selected from topics of current technological interest. Credit to be arranged. Repeatable. Max hours: 9 Credits. **Semester Hours:** 1 to 3

### **MECH 2023 - Statics**

A vector treatment of force systems and their resultants; equilibrium of trusses, beams, frames, and machines, including internal forces and three-dimensional configurations, static friction, properties of areas, distributed loads and hydrostatics. Prereq: PHYS 2311 with a C- or higher. Coreq: MATH 2411. Cross-listed with CVEN 2121. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 2024 - Introduction to Materials Science**

The development of the physical principles relating the structural features of materials to their observed properties. Prereq: ENGR 1130 or CHEM 1130 or (CHEM 2031 and CHEM 2038 and CHEM 1999AE). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 2030 - Analysis Techniques in Mechanical Engineering**

Introduces experimental methods and mathematical analysis used in engineering. Spreadsheets are used to analyze engineering data and prepare tables and graphs. Introduction to computer programming using MATLAB. Prereq: MATH 1401 and MECH 1025 with a grade of C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 2033 - Dynamics**

A vector treatment of dynamics of particles and rigid bodies, including rectilinear translation, central-force, and general motion of particles, kinematics of rigid bodies, the inertia tensor, plane motion of rigid bodies, energy and momentum methods for particles, systems of particles, and rigid bodies. Prereq: MECH 2023 or CVEN 2121 with a C- or higher. Cross-listed with CVEN 3111. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 2034 - Properties of Engineering Materials**

Experiments to determine material properties and the effect of processing on properties important in mechanical design. Materials include metal, polymers, and composites. Loadings include tension, compression, and bending under static, dynamic impact and creep states. Coreq: MECH 2024. Max hours: 1 Credits. **Semester Hours:** 1 to 1

### **MECH 2208 - Special Topics: 2208-2298**

Subject matter to be selected from topics of current technological interest. Credit to be arranged. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **MECH 3010 - Elementary Numerical Methods and Programming**

A development of basic numerical methods used to solve engineering problems. Introduction to MATLAB to implement numerical simulations. Coreq: MATH 3195 (or MATH 3191 and MATH 3200). Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 3012 - Thermodynamics**

Introduces thermodynamic properties and state relationships, processes and cycles with work and heat transfer. Applications of the first and second laws to energy-related engineering systems. Prereq: MATH 1401 and PHYS 2311 with a C- or higher. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MECH 3021 - Introduction to Fluid Mechanics**

Applies exact and approximate theories to engineering problems in fluids. Examples include potential flow theory, Euler's equations for inviscid fluids, Bernoulli's equations, Navier-Stokes equations, and pipe flow. Prereq: MECH 2033, MECH 3012 and MATH 2421 with a grade C- or higher. Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 3022 - Thermodynamics II**

Generalized thermodynamic cycles; general thermodynamic cycle considerations, compressor, expander, heat exchanger processes, refrigeration cycles, mixtures and combustion. Prereq: MECH 3012 or ENGR 3012 and MATH 2421 with a C- or higher. Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 3023 - System Dynamics I: Vibrations**

Modeling of dynamical systems. Analysis of single and multiple degree of freedom systems. Introduction to continuous systems. Prereq: CVEN 3111 or MECH 2033 with C- or higher; MATH 3195 or MATH 3191 and MATH 3200 and MECH 3010 with a C- or higher. Coreq: CVEN 3121 or MECH 3043. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 3027 - Measurements**

Principles of digital and analog measurements; systems for sensing, transporting, modifying, and outputting information; systematic and random error analysis. The laboratory includes a variety of instruments and components illustrating fundamental experimental measurement techniques and methods. Prereq: MECH 3030 or ELEC 3030, MATH 3195 or (MATH 3191 & MATH 3200) with a C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 3028 - Laboratory of Mechanical Measurements**

Modern techniques for Mechanical measurements. Laboratory includes techniques for the calibration of transducers and analysis of Statistical uncertainty. Data Acquisition Systems used for Signal acquisition and measurement of common mechanical quantities, such as displacement, velocity, acceleration and force. Design and characterization of a second order measurement system based on strain gages. Coreq: MECH 3027. Max hours: 1 Credit.

**Semester Hours:** 1 to 1

### **MECH 3030 - Electric Circuits and Systems**

Basic electrical engineering concepts for non-majors. Basic study of circuit analysis (RLC and Op-amps), transformers and motor equations, and simple electronic circuits (diodes and transistors). Prereq: MATH 2421 and PHYS 2331 with a C- or higher. Restricted to majors in CEDC Mechanical Engineering. Cross-listed with ELEC 3030. Max Hours: 3 Credits. **Semester**

**Hours:** 3 to 3

### **MECH 3031 - Fluids/Thermal Laboratory**

Laboratory exercise in compressible and incompressible fluid flow; steady state and transient heat transfer. Prereq: MECH 3012 with a grade of C- or higher. Coreq: MECH 3021 and CVEN 3313. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 1 Credits.

**Semester Hours:** 1 to 1

### **MECH 3032 - Electric Circuits and Systems Lab**

Basic electrical engineering lab for MECH majors. Coreq: MECH 3030 or ELEC 3030. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 1 Credits. **Semester Hours:** 1 to 1

### **MECH 3035 - Design of Mechanical Elements**

Review of mechanics of materials and stress analysis; detailed design of various machine elements such as fasteners, springs, brakes and gears. Includes design project. Prereq: MECH 2024 and MECH 3043 with a grade C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 3042 - Heat Transfer**

Basic laws of heat transfer by conduction, convection, and radiation with engineering design applications. Includes design project. Prereq: MECH 3021 with a grade C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 3043 - Strength of Materials**

Application of exact and approximate theories of stress and displacement to engineering problems in solids. Examples include torsion of rods and bending of beams. Combined stresses, principal stresses and energy methods are examined. Prereq: MECH 2023 or CVEN 2121 with a C- or higher. Cross-listed with CVEN 3121. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 3045 - Principles of Additive Manufacturing**

This course will introduce students to additive manufacturing (AM) techniques and design for additive manufacturing (DfAM). Additive manufacturing is no longer thought of as simply "rapid prototyping," but is influencing the way manufacturing is performed at almost every level of the product lifecycle. It will influence practically every manufacturing system of the future. This course will cover the fundamentals, applications, and implications of AM such that students will understand why and when to use AM, as well as challenge their traditional thinking of design and what is possible. At the end of this course, students should be able to: (1) Describe the 7 processes of AM, and understand their advantages and limitations. (2) Have hands-on experience in using several different AM processes, including building, modifying, and repairing their own AM machine. (3) Understand the wide variety of AM applications beyond prototyping. This includes tooling, production, performance improvement, customization, art, and more. (4) Understand how AM can be used in a product's lifecycle from beginning to end. (5) Use "generative design software" and "topology optimization" to unlock complex designs to be created with AM. (6) Assess the cost and value of AM processes. Prereq: MECH 1045 and MECH 2024 with a grade of C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 3065 - Intermediate Dynamics**

An in-depth study of Newtonian dynamics with constraints. Mechanism synthesis using graphical and analytic techniques. Prereq: MECH 2033 or CVEN 3111 and MECH 3010 with a C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 3147 - Bioengineering**

Explores engineering principles that have application in biology, and principles discovered in biology which may have application in engineering. Some topics covered are: cell biology, molecular biology, viscoelasticity, physical theory of plant cell growth aerodynamics, fluid mechanics, biofluid dynamics and animal flight. Restriction: Restricted to MECH majors with junior standing within the College of Engineering, Design and Computing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 3208 - Special Topics**

Subject matter to be selected from topics of current technological interest. Credit to be arranged. Restriction: Restricted to MECH majors within the College of Engineering, Design and Computing. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **MECH 3840 - Independent Study**

This category is intended for upper-division level special topics which students may wish to pursue on their own initiative, with guidance from a professor who agrees to limited consultation on the work and to award credit when the project is completed. Restriction: Restricted to MECH majors within the College of Engineering, Design and Computing. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **MECH 3939 - Internship**

Undergraduate internship course for credit. Must be approved by department and handled subject to experiential learning office rules. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **MECH 4020 - Biomechanics**

Static and dynamic biomechanical analysis, effects of mechanical loading on bone and cartilage, design considerations in orthopaedic devices, muscle function, biomechanics of human movement, cardiovascular biomechanics. Prereq: MECH 2023, 2033, MATH 3195 or 3200 with a C- or higher. Cross-listed with MECH 5020. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4023 - System Dynamics II: Controls**

Introduces the Laplace Transformation. Control system analysis using root locus and frequency response methods. Basic compensation techniques are to be covered. Prereq: MECH 3023 with a C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4024 - Mechanical Behavior of Materials**

Studies the response of materials to applied stresses. Emphasis is on the understanding of the relationships between structure and properties. Fracture mechanics and fatigue are introduced. Prereq: MECH 3024 with a C- or higher. Restricted to majors in CEDC Mechanical Engineering. Cross-listed with MECH 5024. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4025 - Advanced Biomechanics**

This course provides training in computational and experimental methods for biomechanical engineering analysis. Topics include finite element analysis of biological systems, orthopedic device design, medical imaging analysis, mechanical characterization of biological tissues, and

biomechanics of human movement. Prereq: MECH 4020. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4035 - Senior Design I**

Group and individual projects to design engineering components and systems. Design methodology, product specs, creativity, design reviews, communication, presentations, and report writing are emphasized. MECH 4035 and MECH 4045 form a one year sequence and must be taken consecutively. Prereq: MECH 3035 with a grade C- or higher and 40 hours of MECH courses. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4045 - Senior Design II**

Student teams manufacture and construct and/or redesign mechanical parts or assemblies that they designed in previous course (MECH 4035). A proposal, oral progress reports, and a final written report and demonstration are required. MECH 4035 and MECH 4045 form a one year sequence and must be taken consecutively. Prereq: MECH 4035 with a C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4110 - Numerical Methods for Engineers**

Introduces numerical analysis. Solution of linear and nonlinear equation systems. Numerical methods for ordinary and partial differential equations. Engineering applications. Prereq: MATH 3195 or (3191 and 3200) with a C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4112 - Internal Combustion Engines**

Students obtain a sufficient understanding of internal combustion engines that will allow them to perform analysis of combustion thermodynamics and actual cycles, including heat addition, heat loss, air/fuel flow, and engine design and performance. Prereq: MECH 3012 with a C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Cross-listed with MECH 5112. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4114 - Designing with Composites**

Analysis and design of polymers and polymer-based composites. Failure criteria include static strength, stiffness, creep, fatigue, impact and fracture toughness. Design criteria include strength-to-weight ratio and cost-to-strength ratio. Prereq: MECH 3043 or CVEN 3121 with a C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Cross-listed with MECH 5114. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **MECH 4115 - Applied Plasticity and Creep**

Plastic deformation of materials applied to bulk and sheet metal manufacturing processes such as extrusion, rolling and sheet metal. Linear and nonlinear viscoelastic creep with applications to plates and shells. Prereq: MECH 3043 with a C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Cross-listed with MECH 5115. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **MECH 4116 - Robotics**

Introduces kinematics, dynamics, and control of robot manipulators. Emphasis is placed on computer use in control of actual robots and in computer simulation of mathematical models of robots. Students must turn in a project report based on the computer simulation. Prereq: MECH 3065 with a C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **MECH 4120 - Methods of Engineering Analysis**

Selected topics from real analyses with applications to engineering analyses. Topics include vector calculus, ordinary differential equations, partial differential equations, and calculus of variations. Prereq: MATH 3195 or (MATH 3191 and MATH 3200) with a C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Cross-listed with MECH 5120. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **MECH 4132 - Power Plant Systems Design**

Detailed engineering analysis and design of a thermal power plant, including heat balance, selection of equipment (boiler, turbines, heat exchangers, pumps, cooling tower), performance evaluation, economic evaluation and feasibility studies. Prereq: MECH 3022 with a C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **MECH 4135 - Mechanical Systems Design**

Detailed engineering design of mechanical systems. Students work in teams on a project selected for entire class. Projects are similar to typical ones from industry. Course stresses creativity, synthesis, design judgment, and analysis of real-world problems. Oral and written presentations are required. Prereq: MECH 3035 with a C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **MECH 4136 - Control Systems Design**

Detailed engineering design of control systems. Students work in teams on a project selected for entire class. Projects are similar to typical ones from industry. Course stresses creativity,



synthesis, design judgment, and analysis of real-world problems. Oral and written presentations are required. Prereq: MECH 4023 with a grade of C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4141 - Fluid Mechanics**

Viscous incompressible fluid flows. Topics include derivation of equations governing viscous compressible fluid motion; specializations to simple flows; boundary-layer theory; similarity solutions; introduction to turbulence and Reynolds stresses. Prereq: MECH 3021 with a grade of C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Cross-listed with MECH 5141. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4142 - Thermal Systems Design**

Detailed engineering design of thermal/fluids systems. Students work in teams on a project selected for entire class. Projects are similar to typical ones from industry. Course stresses creativity, synthesis, design judgment, and analysis of real-world problems. Oral and written presentations are required. Prereq: MECH 3010, MECH 3021, and MECH 3042 with a grade of C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4147 - Engineering Economy**

Applies economic and financial principles to evaluation of engineering alternatives. Calculation of annual costs, present worth, and prospective rates of return on investment. Review of systems analysis techniques, including simulation, linear programming, and project scheduling. Restriction: Restricted to MECH majors at the junior or higher level standing within the College of Engineering, Design and Computing. Cross-listed with CVEN 4077. Max Hours: 3 Credits. Semester Hours: 3 to 3 **Semester Hours:** 3 to 3

### **MECH 4155 - Air Conditioning Design**

Basic principles of heating and ventilating systems. Determination of heating and cooling loads. Design and layout of heating, ventilating, and air conditioning systems. Includes design project. Prereq: MECH 3022 and MECH 3042 with a grade of C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4160 - Introduction to Operations Research**

Introduces operations research, including mathematical programming models, models for decision alternatives, for procurement and inventory, and for queuing operations. Prereq: MATH 3195 or (MATH 3191 and MATH 3200) with a grade of C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4163 - Rigid-Body Dynamics**

Review of Newtonian dynamics, Lagrange's equations for particles, systems, and rigid bodies. Conservative and non-conservative systems, moments of inertia, principal axes, angular momentum and Euler equations. Illustrations from spinning bodies, including tops, gyro-compass and rotating machinery. Prereq: MECH 2033 or CVEN 3111, MATH 3195 or (MATH 3191 and MATH 3200) with a grade of C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Cross-listed with MECH 5163. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4166 - Computerized Numerical Control (CNC) Manufacturing**

Modern manufacturing engineering concepts using computerized numerical control (CNC). The students learn state-of-the-art CNC methodologies, including digitizing, drawing, generating codes, and manufacturing, using modern CNC machines. Restriction: Restricted to MECH majors with junior standing within the College of Engineering, Design and Computing. Cross-listed with MECH 5166. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4175 - Finite Element Analysis in Machine Design**

Students learn basic theory of finite element analysis (FEA) as it applies to stress analysis and design of mechanical components. Commercial package will be used giving students practical experience in the use of FEA. Prereq: MECH 3035 with a grade of C- or higher. Restriction: Restricted to majors in CEDC Mechanical Engineering. Cross-listed with MECH 5175. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4176 - Introduction to Sports Engineering**

Sports Engineering requires working both with the principles of biomechanics and the principles of engineering design and analysis. Using biomechanics is necessary in understanding the forces on the interface between the human athlete and his/her equipment. Recommended Prereq: MECH 2033, 3012 and 3021. Cross-listed with MECH 5176. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4177 - Energy Conversion**

This introductory Energy Conversion course introduces the basic background, terminology, and fundamentals of various forms of energy conversion. The topics covered will include: fuel cells, batteries, photovoltaic systems, solar thermal, and wind energy. Recommended Prereq: MECH 3012. Cross-listed with MECH 5177. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4178 - Solar Engineering**

This course provides the student with the basic ideas and calculation procedures on how solar processes work and how their performance can be predicted. Recommended Prereq: MECH 3012. Cross-listed with MECH 5178. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4179 - Introduction to Turbomachinery**

This introductory Turbomachinery course introduces the basic background, terminology, and fundamentals of various forms of turbomachines. The analysis of the various turbomachines will be focused on the performance of the turbomachine. Recommended Prereq: MECH 3012. Cross-listed with MECH 5179. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4195 - Solid Modeling**

This is a basic course in solid modeling using Solid Works computer software. Topics include feature-based modeling, parametric part design, parent/child relationships, use of datums, patterning, relations, sweeps, blends, assembly, tolerancing, rapid prototyping, CNC manufacturing, CMM inspection, and Step standards. Restriction: Restricted to major in CEDC Mechanical Engineering with junior standing. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 4208 - Special Topics**

Subject matter to be selected from topics of current technological interest. Credit to be arranged. Restricted to majors in CEDC Mechanical Engineering. Cross-listed with MECH 5208. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **MECH 4840 - Independent Study**

This category is intended for upper division level special topics which students may wish to pursue on their own initiative, with guidance from a professor who agrees to limited consultation on the work and to award credit when the project is completed. Restriction: Restricted to majors in CEDC Mechanical Engineering. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **MECH 5001 - Seminar: Introduction to Research**

This course is intended to introduce graduate students to the fundamental skills and methods needed to perform research. Topics include writing technical papers, presentation skills, testing methodology, hypothesis creation and more. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **MECH 5020 - Biomechanics**

Static and dynamic biomechanical analysis, effects of mechanical loading on bone and cartilage, design considerations in orthopaedic devices, muscle function, biomechanics of human

movement, cardiovascular biomechanics. Graduate standing or permission of the instructor required. Cross-listed with MECH 4020. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5024 - Mechanical Behavior of Materials**

Students will learn about the mechanical behavior of materials using a multi-scale, materials oriented approach. The course will relate how atomistic and molecular mechanisms relate to macroscopic and continuum properties of materials across acute and long-term time scales. Graduate standing or permission of the instructor required. Cross-listed with MECH 4024. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5025 - Advanced Biomechanics**

This course provides training in computational and experimental methods for biomechanical engineering analysis. Topics include finite element analysis of biological systems, orthopedic device design, medical imaging analysis, mechanical characterization of biological tissues, and biomechanics of human movement. Prereq: MECH 4020 or MECH 5020. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5110 - Numerical Methods for Engineers**

Introduces numerical analysis. Solution of linear and nonlinear equation systems. Numerical methods for ordinary and partial differential equations. Engineering applications. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4110. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5112 - Introduction to Internal Combustion Engines**

This course provides an introduction to the major characteristics of internal combustion engines and defines the major parameters used to describe the engine operation and design conditions. Students perform analysis of the thermal performance of the engines. Graduate standing or permission of the instructor required. Cross-listed with MECH 4112. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5114 - Designing with Composites**

Analysis and design of polymers and polymer-based composites. Failure criteria include static strength, stiffness, creep, fatigue, impact and fracture toughness. Design criteria include strength-to-weight ratio and cost-to-strength ratio. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4114. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5115 - Applied Plasticity and Creep**

Plastic deformation of materials applied to bulk and sheet metal manufacturing processes such as extrusion, rolling and sheet metal. Linear and nonlinear viscoelastic creep with applications to plates and shells. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4115. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5120 - Methods of Engineering Analysis**

Selected topics from real analyses with applications to engineering analyses. Topics include vector calculus, ordinary differential equations, partial differential equations and calculus of variations. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4120. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5121 - Introduction to Fluid Dynamics**

Physical properties of gases and liquids; kinematics of flow fields; equations describing viscous, heat-conducting Newtonian fluids. Exact solutions and rational approximations for low- and high-speed dissipative flows, surface and internal waves, acoustics, stability, and potential flows. Graduate standing or permission of instructor required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5122 - Macroscopic Thermodynamics**

Axiomatic presentation of fundamentals of classical thermodynamics (first law); energy, work and heat. Equilibrium, reversible, and irreversible processes; entropy production and the second law. Applications to stability and phase equilibrium. Irreversible thermodynamics and the Onsager reciprocal relations. Graduate standing or permission of instructor required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5123 - Introduction to Continuum Mechanics**

Cartesian tensor notation. Deformation, strain, strain rate and compatibility. Definition of stress vector and tensor. Fundamental balance laws of mass, momentum and energy; entropy production inequality. Constitutive equations for elastic, viscoelastic and plastic materials; ideal, compressible, and viscous fluids. Beltrami-Mitchell and Navier-Stokes equations. Graduate standing or permission of instructor required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5124 - Yield-Limited Behavior of Materials**

Analysis of material behavior within the "elastic range," with emphasis on the phenomenon of yield and factors that influence it. Examination of the theory of dislocations; study of strengthening mechanisms in solids. Consideration of various time-dependent but reversible (inelastic) deformation phenomena. Presentation of appropriate engineering case studies to

augment various topics. Graduate standing or permission of the instructor required. Prereq: MECH 5143 with a grade of B- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5133 - Theory of Inelastic Materials**

Mathematical theory of linear viscoelasticity. Finite elements models. Solution of boundary-value problems in linear viscoelasticity. Non-Newtonian flow. Selected topics in nonlinear material behavior. Graduate standing or permission of the instructor required. Prereq: MECH 5143 with a B- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5141 - Viscous Flow**

Viscous incompressible fluid flows. Topics include derivation of equations governing viscous compressible fluid motion; specializations to simple flows; boundary-layer theory; similarity solutions; introduction to turbulence and Reynolds stresses. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4141. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MECH 5142 - Statistical Thermodynamics**

Introduces the molecular interpretation and calculation of thermodynamic properties of matter, thermodynamic probability, distribution functions, Schrodinger wave equations and solutions and ensemble theory. Applications to ideal and real gases, solids, liquids, radiation, conduction electrons, and chemical equilibrium. Graduate standing or permission of instructor required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5143 - Theory of Elasticity**

Review of the basic equations of linear theory of elasticity. St. Venant torsion and flexure. Plane strain, plane stress, and generalized plane stress. Application of conformal mapping and Fourier transform techniques. Graduate standing or permission of instructor required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5144 - Plasticity and Creep**

Inelastic deformation of materials such as metals, alloys, glasses, composites and polymers from the phenomenological and structural point of view. Case studies of plastic and creep deformations in engineering materials. Prereq: MECH 5143 with a grade of B- or higher and graduate standing or permission of the instructor required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5161 - Compressible Flow**

Energy, continuity, and momentum principles applied to compressible flow; one-, two-, and three-dimensional subsonic, supersonic and hypersonic flows. Normal and oblique shocks, and method of characteristics. Prereq: MECH 5141 with a grade of B- or higher and graduate standing or permission of the instructor required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5162 - Heat Transfer I**

Review of equations governing transport of heat by conduction and radiation. Analytical and numerical solution of boundary value problems representative of heat conduction in solids. Radiation properties of solids, liquids and gases; transport of heat by radiation. Prereq: Graduate standing or permission of instructor required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5163 - Dynamics**

Review of Newtonian dynamics, Lagrange's equation for particles, systems and rigid bodies. Conservative and non-conservative systems, moments of inertia, principal axes, angular momentum and Euler equations. Illustrations from spinning bodies, including tops, gyro-compass and rotating machinery. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4163. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5166 - Computerized Numerical Control (CNC) Manufacturing**

Modern manufacturing engineering concepts using computerized numerical control (CNC). The students learn state-of-the-art CNC methodologies, including digitizing, drawing, generating codes, and manufacturing using modern CNC machines. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4166. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5172 - Heat Transfer II**

Review of equations governing transport of heat in fluids in motion. Description of heat transfer in free and forced convection, including laminar and turbulent flow. Dimensional analysis and heat transfer correlations, numerical methods and combined heat transfer mechanisms. Graduate standing or permission of the instructor required. Prereq: MECH 5141 with a B- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5175 - Finite Element Stress Analysis**

Students learn basic theory of finite element analysis (FEA) as it applies to stress analysis and design of mechanical components. Commercial package will be used giving students practical experience in the use of FEA. Graduate standing or permission of the instructor required.

Prereq: MECH 5143 with a B- or higher. Cross-listed with MECH 4175. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MECH 5176 - Introduction to Sports Engineering**

Sports Engineering requires working both with the principles of biomechanics and the principles of engineering design and analysis. Using biomechanics is necessary in understanding the forces on the interface between the human athlete and his/her equipment. Prereq: Graduate standing or permission of the instructor required. Cross-listed with MECH 4176. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MECH 5177 - Energy Conversion**

This introductory Energy Conversion course introduces the basic background, terminology, and fundamentals of various forms of energy conversion. The topics covered will include: fuel cells, batteries, photovoltaic systems, solar thermal, and wind energy. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4177. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MECH 5178 - Solar Engineering**

This course provides the student with the basic ideas and calculation procedures on how solar processes work and how their performance can be predicted. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4178. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MECH 5179 - Introduction to Turbomachinery**

This introductory Turbomachinery course introduces the basic background, terminology, and fundamentals of various forms of turbomachines. The analysis of the various turbomachines will be focused on the performance of the turbomachine. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4179. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MECH 5180 - Advanced Heat Transfer**

This course provides fundamental concepts and applicable mathematical techniques for understanding the physics of various modes of heat transfer. Topics include heat conduction in finite and semi-infinite domains, phase change, microscale heat conduction, laminar forced and free convection, turbulence forced and free convection, and thermal radiation. Prereq:

Graduate standing or permission of instructor required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5182 - Microscale Transport Phenomena**



This course provides the foundations on the physics of microscale transport phenomena, where continuum effects break down, with applications in MEMS and NEMS. Topics include gas microflows, liquid microflows, surface tension-driven flows, electrokinetics transport, kinetic theory, simulation techniques, lattice Boltzmann methods. Prereq: MECH 3021 and MECH 3042. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5208 - Special Topics**

Subject matter to be selected from topics of current technological interest. Credit to be arranged. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4208. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **MECH 5840 - Independent Study**

Available only through approval of the graduate advisor. Subjects arranged to fit needs of the particular student. Graduate standing or permission of the instructor required. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **MECH 5939 - Internship**

Students gain engineering design experience involving application of specific technical concepts and skills in a supervised industrial environment. (Must have approval from MECH faculty.) Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MECH 5950 - Master's Thesis**

Graduate standing or permission of the instructor required. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 6

### **MECH 5960 - Master's Report**

Master of Science in Engineering report. Students seeking the Master of Science in Engineering, and who do not choose to do a thesis, must complete an individual project of an investigative and creative nature under the supervision of a member of the graduate faculty. Graduate standing or permission of the instructor required. Repeatable. Max hours: 6 Credits. **Semester Hours:** 3 to 3

### **MECH 5970 - Graduate Problem Course**

The graduate problem course is for the solution of specific problems in MECH specialty areas. Each student is assigned a set of problems of some difficulty requiring the use of the literature of the various areas covered. Prereq: 15 hours of graduate level courses in MECH. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MECH 6184 - Advanced Fluid Mechanics**

This course provides a description of the advanced concepts for understanding the physics of fluid motion under different regimes. Topics include kinematics, stresses, equation of motion, vorticity transport, low Reynolds number flow, irrotational flow, interfacial flow, acoustics&waves, hydrodynamic stability & transition, turbulent flow. Prereq: MECH 5141. Restriction: Restricted to students with graduate standing, or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MECH 8990 - Doctoral Dissertation**

Graduate standing or permission of the instructor required. Repeatable. Max hours: 10 Credits. **Semester Hours:** 1 to 10

## **Minority Access Research Careers**

### **MARC 2880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **MARC 2990 - Special Topics**

Studies special topics to be selected by the instructor. Note: May be repeated for credit under unique course topics. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **MARC 3880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **MARC 3990 - Special Topics**

Studies special topics to be selected by the instructor. Note: May be repeated for credit under unique course topics. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **MARC 4090 - Research Design & Development**

This advanced writing and research methods course is designed to help students develop independent research ideas into formal products, such as a thesis proposal, grant application, presentation, and study protocols. Prereq: permission of the instructor. Cross-listed with PSYC 4090. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MARC 4680 - Behavioral & Biomedical Sciences Research Seminar**

Introduces research in the behavioral and biomedical sciences. Students will learn about research programs at CU Denver and other centers, present their own research, and interact with the local scientific community. Prereq: permission of the instructor. Cross-listed with PSYC 4680. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 2

## **MARC 4780 - Behavioral & Biomedical Sciences Research: Ethics & Issues**

Students will critically review and analyze some of the major ethical and policy issues that arise during the conduct of basic and applied behavioral research. Prereq: PSYC 1000, 1005, 2090, 2220 and 3090 or instructor permission. Cross-listed with MARC 5780. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MARC 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **MARC 4990 - Special Topics**

Advanced study of special topics to be selected by the instructor. Note: May be repeated for credit under unique course topics. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **MARC 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **Modern Languages**

### **MLNG 4690 - Methods of Teaching Modern Languages**

Studies the methods and practices of teaching modern languages. Note: requirement for language majors in the teacher certification program, School of Education, CU Denver. Cross-

listed with MLNG 5690, SPAN 4690, SPAN 5690, FREN 4690, FREN 5690, GRMN 4690, GRMN 5690, CHIN 4690, CHIN 5690. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MLNG 5690 - Methods of Teaching Modern Languages**

Studies the methods and practices of teaching modern languages. Note: requirement for those wishing to be teaching assistants in the Department of Modern Languages, and for language majors in the teacher certification program, School of Education, CU Denver. Note: This course is taught in English and does not fulfill the foreign language proficiency requirement for the College of Liberal Arts and Sciences. Cross-listed with MLNG 4690, SPAN 4690, SPAN 5690, FREN 4690, FREN 5690, GRMN 4690, GRMN 5690, CHIN 4690, CHIN 5690. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MLNG 5691 - Methods of Teaching Modern Languages II**

A continuation of the study of modern language teaching methods. This second course has an emphasis on experiential learning through individual teaching demonstrations, class observations, as well as team teaching with experienced instructors. Cross-listed with MLNG 4691, SPAN 4691, SPAN 5691, FREN 4691, FREN 5691, GRMN 4691, GRMN 5691, CHIN 4691, CHIN 5691. Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MLNG 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **Music**

### **MUSC 1011 - The Greatest Albums of All Time**

Explores the greatest recorded albums of the modern era. Students will gain historical perspective on specific groups and also learn about the tools and techniques used in their production process. For students who want to learn how to listen to music with greater understanding and appreciation. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 1111 - First-Year Seminar**

Restriction: Restricted to Freshman level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 1540 - Introduction to Audio Production**

Operating principles and performance characteristics of microphones, amplifiers, speaker systems, equalizers, mixers and multi-track recorders; acoustics of music, auditoriums and recording studios. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 1541 - Audio Production I**

Operating principles and performance characteristics of microphones, amplifiers, speaker systems, equalizers, mixers and multi-track recorders; acoustics of music, auditoriums and recording studios. Coreq: MUSC 1542. Restriction: Restricted to MUSC-BS with a sub-plan of MRA or MST. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 1542 - Audio Production Lab**

Lab component to Audio Production I. Focus is on digital audio workstation fluency including recording, editing, processing, signal flow, and automation, and multitrack mixing principles. Coreq: MUSC 1541. Restriction: Restricted to MUSC-BS majors withing the College of Arts and Media. Max Hours: 1 Credit. **Semester Hours:** 1 to 1

### **MUSC 1560 - Audio Production II**

Studies include theoretical and practical music production techniques with topics covering digital audio workstations, signal flow, digital signal processing, MIDI production, synthesis, and sampling. Team lab recording projects involve recording, mixing, and other music production techniques. Prereq: MUSC 1540 or MUSC 1541, and MUSC 1542. Restriction: Restricted to MUSC-BS majors with a sub-plan of MRA or MST. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 1800 - Acoustics for Audio Production**

This course studies the nature of sound and practical applications for critical listening and recording environments. Topics include the nature of sound, studio and concert hall design measurement and analysis. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 2125 - Electronic Music Production Techniques**

Students will learn contemporary electronic music techniques using current software. The class will include MIDI sequencing, looping, sampling, FM synthesis, subtractive synthesis, and wavetable synthesis. Students will also learn how to appropriately use effects and digital editing. Prereq: MUSC 1560; Restricted to MUSC-BS majors with a sub-plan of MRA or MST. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 2450 - Performing Arts Management and Presentation**

Introduces students to nonprofit and for-profit arts organization issues in performance presentation including organization structure, performance production and management, development of leadership and organizational skills as well as a general understanding of the profession. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 2510 - Topics in Recording Arts**

Selected topical subjects to include live or studio sound recording, sound reinforcement, new technologies or practices in the audio industry. Repeatable. Max hours: 6 Credits. **Semester Hours:** 3 to 3

### **MUSC 2550 - Critical Listening for Recording Arts**

Students will be trained to recognize: boosts and cuts in different bands of frequencies at increasingly small increments, types of distortion, parameters for compression, delay, reverb and stereo imaging. Students will develop a vocabulary for describing sounds and improving auditory memory. Prereqs: MUSC 1560, 1800; Co-req: MUSC 2580; Restricted to BS-MUSC MRA or MST sub-plan only. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 2580 - Audio Production III**

Advanced studies in sound recording and reinforcement, aesthetics and techniques of multi-track digital recording and stereo imaging. Team lab recording projects. Prereq: MUSC 1560, MUSC 1800; Co-req: MUSC 2550; Restricted to BS-MUSC MRA and MST sub-plans only. Cross-listed with MSRA 5550. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 2590 - Mastering & Advanced Digital Audio**

A study and practice of the art of mastering. Topics covered include: history, monitoring, signal flow, metering, jitter, audio restoration, limiting, creating a CD pre-master, & mastering for new media. Students will get practical experience mastering their own projects. Prereq: MUSC 2550 & 2580; Restricted to MRA and MST sub-plan only. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 2600 - A History of Audio in 30 objects**

Explore the history of audio through the stories of 30 key objects. From Edison cylinders to Apple computers. This class will trace the development of recording technology and techniques, and discuss how they effect the way we work today. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 2700 - Introduction to Music Business**

Introduces music as a business and a product, emphasizing music publishing, recording, broadcasting, marketing, licensing and legal aspects. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 2750 - Introduction to Music Business**

Introduces music as a business and product emphasizing music publishing, recording, broadcasting, marketing, licensing and legal aspects. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 2815 - Music Industry Topics**

Various topics related to music business and recording arts industries. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 3

### **MUSC 2851 - Introduction to the International Music Business**

Students are introduced to the fundamentals of the international music business in diverse countries, including through online discussions and research. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 2852 - Introduction to International Music Technology**

Historical and current global innovations in music technology and their impact on popular music. From magnetic tape to DAWs, monophonic to immersive audio, Roland's 808 bass to Ableton Live. Japan, Germany, Sweden, and the UK are among those represented. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 2853 - International Music Business Study Abroad**

Students engage in music-business field trips to international settings to attend industry events, interact with industry professionals and conduct research for a practical perspective on the increasing globalization of the music industry. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 2854 - International Recording Arts Study Abroad**

Students become acquainted with music technology in a different country by visiting music conferences, recording studios, manufacturers, and historical landmarks. Students compare culturally-based standards and expectations of quality and communication to enhance their sense of professionalism in the field. Max hours: 3 Credits **Semester Hours:** 3 to 3

### **MUSC 3125 - Sound and Music for Video Games**

This course will give students an overview of the function of sound and music for video games including: history, sound engines, types of audio utilized, stereo and surround sound localization, music capabilities of hardware configurations and future trends in sound for video games. Prereq: MUSC 2580. Max hours: 3 Credit. **Semester Hours:** 3 to 3

### **MUSC 3130 - Sound and Music For Video Games II**

Course is a continuation of Sound and Music for Video Games. Topics of study include non-linear music composition and implementation, advanced sound design techniques, optimization, and hands-on experience with modern game engines and game audio engines. Prereq: MUSC 3125. Restriction: Restricted to MUSC-BS majors with a sub-plan of MRA or MST. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3210 - Music and Entertainment Marketing**

In this course students learn the essential elements of marketing as applied to the music and entertainment industry. Course topics include: marketing principles, theories and tools utilized in the music and entertainment businesses and specific industry practices and applications. Prereq: MUSC 2700. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3220 - Artist Management**

Students learn the theory and practice of artist management as it relates to developing a career through entrepreneurship, establishing business structures for the artist, and concepts including: promotion, live performance, recording, contracts, and essential business practices. Prereq: MUSC 2700 Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3250 - Music and Entertainment Marketing**

Students learn the essential elements of marketing as applied to the music and entertainment industry. Course topics include: marketing principles, theories and tools utilized in the music and entertainment businesses and specific industry practices and applications. Restricted to Music Industry Studies Minor MUIS-MIN. Prereq MUSC 2750 or MUSC 2700. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3260 - Artist Management**

Students learn the theory and practice of artist management as it relates to developing a career through entrepreneurship, establishing business structures for the artist, and concepts including: promotion, live performance, recording, contracts, and essential business practices. Restricted to Music Industry Studies Minor MUIS-MIN. Prereq MUSC 2750 or MUSC 2700. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3265 - Music Industry Networking**



This course examines key networking strategies, processes and methods within the music industry. Students will research potential markets using social media, face-to-face interaction and other electronic means. Prereq: MUSC 3220. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3505 - Introduction to Audio Post Production**

Reviews all aspects of audio synchronized with picture, including music, sound effects, narration, and dialog replacement. Topics studied with respect to film, video and multi-media. Cross-listed with MSRA 5505. Prereq: MUSC 2590; Restricted to MUSC-BS majors with a sub-plan of MRA or MST. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3515 - History of 20th Century Film Music**

This survey of the history of 20th century music in film will acquaint aspiring filmmakers and musicians with a history of the music, as well as concepts of film theory and the creative use of film music. Restricted to students with Junior or Senior status. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3530 - Live Sound Reinforcement**

This course focuses on the basic elements of sound reinforcement: acoustics, equalization, equipment and mixing techniques. The major emphasis is the production of the final sonic product. Prereq: MUSC 2580. Restriction: Restricted to Sophomore standing or higher and to MUSC-BS with a sub-plan of MRA or MST. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3545 - Music Editing in Visual Media**

Music editing for film and television. Spotting notes, temp tracks, cue sheets, scoring session management, dubbing stage fixes, and Performing Rights Artists notes. Cross-listed with MSRA 5545. Prereq: MUSC 3505. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3555 - Dialogue Editing & Mixing for Visual Media**

Dialogue editing and mixing for film and television. Recording Voiceover, Automated Dialogue Replacement, Group ADR, Efforts. Noise-reduction, mix levels, compression, limiting, EQ and use of reflected sound. Cross-listed with MSRA 5555. Prereq: MUSC 3505. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3605 - Audio Post Production II**

Students will learn advanced Pro Tools techniques by designing, conceptualizing, and completing sound for a student film project. This interdisciplinary course prepares students for working relationships between Recording Arts, Film and Video areas and an entry level job in

post production. Prereq: MUSC 3505; Restricted to MUSC-BS majors with a sub-plan of MRA or MST. Cross-listed with MSRA 5605. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3615 - Topics In Music Business**

Various topics relating to the study of music business. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3650 - Music Touring**

Study of the important elements related to the successful execution of musical tours. Topics include tour management, deal memos and contracts, advancing a tour, tour routing, management/booking agents, merchandise sales, tour accounting, hand tour marketing. Prereq: MUSC 3210 and MUSC 3220. Restriction: Restricted to MUSC-BS majors within the College of Arts and Media. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3690 - Concert Promotion and Venue Management**

This course gives students a working knowledge of touring, presenting, promoting, marketing and management of live concerts. They will undertake an in-depth analysis from various points of reference: issues for agent, independent promoter, venue manager, tour/production manager and performer. Prereq: MUSC 3210 and MUSC 3220. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3699 - Concert Promotion and Venue Management**

This course gives students a working knowledge of touring, presenting, promoting, marketing and management of live concerts. They will undertake an in-depth analysis from various points of reference: issues for agent, independent promoter, venue manager, tour/production manager and performer. Restricted to Music Business Minors. Prereqs: MUSC 3250 and MUSC 3260. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3700 - Music and Entertainment Business in the Digital Age**

In this course students learn the trends and developments changing the industry in the Digital Age. Course focuses on current technology, terminology and business models shaping the industry, preparing students for entry into an evolving music and entertainment career. Prereq: MUSC 3210 and 3220. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3710 - CAM Records**

Provides students with an opportunity to use knowledge and skills from music business courses to create and execute initiatives while partnering with local artists and music-related entities

for a hands-on learning experience that benefits the student and local music community. Prereq: MUSC 3210 and 3220. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3715 - Music Business Modules**

Modular courses intended to expose students to specific business and management aspects of various subindustries within the music industry.. Prereq: MUSC 3690. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **MUSC 3720 - Law and the Music Industry**

Students will learn how to use and analyze music law principles through a review of essential court case studies. Students will be tested on lecture material and provided with an opportunity to complete research papers for a more in-depth examination. Prereq: MUSC 3690, 3700, 3710 and 3755. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3730 - Introduction to Music Cities**

In this course, students will examine the development and enhancement of music communities, using as templates the music communities in the city of Denver, the state of Colorado, and other cities throughout the world. Restriction: Restricted to Students with a Junior or Senior Standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3731 - Non Profit Entities in Music and Creative Economies**

Students explore the viability, creation, effective operation, and sustainability of a music-related non-profit entity within a music community and how it can strengthen the economic and social well-being of that community. Restriction: Restricted to students with a junior or senior standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3732 - Advanced Music Cities**

Students explore how investment in a city's music economy can be beneficial to the development of both a city's physical and economic landscape. Restriction: Restricted to students with a junior or senior standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3733 - Music Tourism**

Students will learn how to use music to drive local and regional tourism strategies. Restriction: Restricted to students with a junior or senior standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3740 - Location Sound Recording**

Studies workflow and techniques for location recording for film, video, TV, and video games. Students will work in field and in the studio recording and producing sound effects. Topics include microphone selection, field recording, editing and related industry studies. Prereq: MUSC 2590; Restricted to MUSC-BS majors with a sub-plan of MRA or MST. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3750 - Women in the Music Industry**

An exploration of the role of women in the music industry, from performers to recording professionals, managers, and executives. This course offers historical perspective on gender diversity in the industry, and explores current issues and its impact on music. Prereq: MUSC 2700. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3755 - Music Publishing**

Students will learn key issues related to music publishing and song marketing activities, as well as the function and responsibilities of music publishers. Students will gain insight into skills needed to operate a music publishing company. Prereq: MUSC 3210 and 3220. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3760 - Music Publishing**

Students will learn key issues related to music publishing and song marketing activities, as well as the function and responsibilities of music publishers. Students will gain insight into skills needed to operate a music publishing company. Restricted to Music Business Minors. Prereqs: MUSC 3250 and MUSC 3260. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3775 - Music Supervision**

An examination of processes and strategies associated with securing licenses for music in media outside the music industry. This course offers hands-on opportunity to make music selections for a variety of media using licensing/contract deals for composers, publishers, and labels. Prereq: MUSC 3720 and MUSC 3755. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3785 - Current Issues In the Music Business**

Class discusses and analyzes cutting-edge business and legal developments in the music industry, focusing particularly on the developments' impact on historical traditions, career paths and creative applications in the field. Prereq: MUSC 3690. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3790 - Video Production in the Arts: Music**

Introduces the development of the contemporary music video with an emphasis on stylistic and technical analysis. Combines a lecture demonstration format with hands-on videography. Open to music, theatre, fine arts majors, and students who have successfully completed at least one College of Arts and Media course. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **MUSC 3845 - The Beatles**

This course explores the music, biography, cultural impact and business of the Beatles. Restriction: Students must be of sophomore-, junior-, or senior-level standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3850 - History of the Music Industry**

This course investigates the historical development of the music industry from an economic, social, artistic, political, and technological perspective. It focuses on organizations, genres, business systems and influential individuals. Restriction: Restricted to MUSC-BS majors within the College of Arts & Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 3939 - Internship**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **MUSC 4100 - Advanced Composition**

Composition of extended forms. May be repeated once for credit. Prereq: MUSC 3200. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **MUSC 4210 - Advanced Music Law**

Students will conduct in-depth research on focused music law issues, and engage in a workshop setting in drafting, reviewing and negotiating music business contracts. Prereq: MUSC 3720. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 4400 - The International Music Business**

Students examine key elements of the music business structures of different countries, including the countries' trade organizations, industry executives, music artists (as examples of music business success), intellectual property principles and current music business issues. Prereq: MUSC 3720. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 4500 - Topics in Professional Audio**

Selected topical subjects to include live or studio sound recording, sound reinforcement, new technologies or practices in the audio industry. Prereq: MUSC 4550. Cross-listed with MSRA 5500. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 1

### **MUSC 4510 - Topics in Recording Arts**

Selected topical subjects to include live or studio sound recording, sound reinforcement, new technologies or practices in the audio industry. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 4525 - Multimodal Interaction for Music**

This course explores human-computer interaction in music composition and performance. Students will learn to program and use open-source hardware to build novel and creative musical interfaces and instruments. Restriction: Restricted to Junior/Senior level students in the Recording Arts program. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 4535 - Sound Effects & Foley for Visual Media**

Techniques for recording sound effects in the field and recording Foley in the studio. Use of library effects. Use of mixing techniques and plug-ins to create more complex sounds. Cross-listed with MSRA 5535. Prereq: MUSC 3505. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 4545 - Re-recording Mixing for Visual Media**

Techniques for mixing dialogue, ADR, music, sound effects, background ambiences and Foley. Different level standards and deliverables. Cross-listed with MSRA 5565. Prereq: MUSC 3555 or MUSC 4535. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 4575 - Surround Sound**

This lecture-lab course deals with surround sound in film, digital TV and DVDs. Topics include monitoring, microphone techniques, recording, mixing, mastering, delivery formats and psychoacoustics. Students work on two lab projects in the semester. Prereq: MUSC 4505. Cross-listed with MSRA 5575. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MUSC 4580 - Audio Production Seminar**

Faculty and majors of the music engineering program assemble to discuss and demonstrate issues of artistic and technical applications of recording technology. Student projects, faculty, and guest lectures provide topical focus. (Music facility fee applies) Prereq: MUSC 4560. Coreq: MUSC 4505. Cross-listed with MSRA 5580. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 3

## **MUSC 4581 - Audio Production Seminar II**

A capstone project based course in which students complete professional quality projects in music production and/or post production. Students refine their engineering skills and develop new skills required for integration in the music industry such as portfolio design and resume development. Prereq: MUSC 4580. Cross-listed with MSRA 5581. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

## **MUSC 4740 - Music Business Analysis**

Students learn to analyze specific managerial situations unique to the music and entertainment industries and will understand aspects of finance, taxation, and management science. Prereq: MUSC 3690, 3700, 3710 and 3755. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MUSC 4800 - Music Industry Entrepreneurship**

MIE is a project-based course focused on individual entrepreneurial endeavors. Students will supply their own business, music, multi-media or audio projects. The class will focus on principles of entrepreneurship and helping student's develop those projects into viable businesses or creative releases. Restriction: Restricted to Juniors and Seniors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MUSC 4820 - Digital Music Techniques**

Studies the general principles and applications of digital music technology, emphasizing the function and operation of specific computer software. Topics include digital audio workstations, MIDI sequencers, digital signal processing programs, and distribution on optical discs and computer-based mediums. Prereq: Admittance to Recording Arts/Tech focus. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MUSC 4890 - Music Business Senior Seminar**

Seminar activities focus on students developing, discussing and completing individual capstone projects. This includes an in-depth research paper and in-class presentation to allow students to explore their relevant interests in the music business. Prereq: MUSC 3720. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Performance Music**

### **PMUS 1001 - Music Appreciation**

Explores the style of music in the major compositional periods, including contemporary pop styles. This course will not satisfy any degree requirements for music majors. For non-music majors who want to learn how to listen to music with greater understanding and pleasure. Max

hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-AH1 **Semester Hours:** 3 to 3

### **PMUS 1011 - World Pop**

Explores popular music from around the world with an emphasis on the latest trends. This is for non-music majors who want to learn about other cultures and learn how to listen to all music with greater understanding. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 1020 - Beginning Musicianship**

Provides basic musical and theoretical skills to students who do not have the proficiency to enroll in Theory I and Ear Training I. Major concepts include an introduction to music fundamentals, basic ear training, introduction to sight singing and an applied understanding of the keyboard. This course will not satisfy any degree requirements for Music majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 1021 - Piano Class For Non-Majors**

Elementary group instruction in piano skills for non-majors. Course focuses upon development of basic reading and performance skills for the non-Music Major. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1022 - Piano Class II for Non-Majors**

Intermediate to Advanced instruction in piano skills for non-majors. Course focuses on further development of reading and performance skills for the non-Music Major. Prereq: PMUS 1021 or permission of instructor. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1023 - Piano Class I**

This course focuses on beginning note reading in both treble and bass clefs, learning one octave major key scales, basic harmonization, and beginning improvisation. Students perform in both individual and group settings. Note: This course is restricted to Music-Majors only. Coreq: PMUS 1100 and 1110. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1024 - Piano Class II**

This course focuses on intermediate sight reading, technique, chord vocabulary, major and minor scales, and improvisation. Students perform in both individual and group settings. Note: This course is restricted to Music-Majors only. Prereq: PMUS 1023. Coreq: PMUS 1200 and 1210. Max hours: 1 Credits. **Semester Hours:** 1 to 1

### **PMUS 1025 - Piano Class III**



Students entering this course are expected to have general fluency in major and minor scales. The course focuses on expanding chord vocabulary, sight reading, transposition, and performing more advanced repertoire. Students perform in both individual and group settings. Note: This course is restricted to Music-Majors only. Prereq: PMUS 1024. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1026 - Piano Class IV**

Students entering this course are expected to have fluency in sight reading, major and minor scales. The course focuses on harmonizing with complex chords, playing by ear, improvisation, and playing repertoire in broader range of key signatures. Students perform in both individual and group settings. Note: This course is restricted to Music-Majors only. Course meets in Roland Piano Lab. Prereq: PMUS 1025. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1040 - Class Guitar**

Designed to provide each student with a basic knowledge of the fretboard. The course material focuses on beginning note reading, basic chord forms and elementary improvisation. Students have the opportunity to perform in both individual and group settings. Repeatable. Max hours: 3 Credits. **Semester Hours:** 1 to 1

### **PMUS 1041 - Class Guitar II**

This group guitar class is designed to go beyond PMUS 1040 and provide students with an advanced knowledge of the fretboard. The course material focuses on advance position note reading, complex chord forms and scale vocabulary. Students have the opportunity to perform in both individual and group settings. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1045 - Class Guitar I for Non-Majors**

This class will address basic techniques and concepts of playing the guitar, for non-majors. Students will gain a basic proficiency with regard to picking and fingerstyle technique, and learn essential contemporary harmony through the performance of etudes and songs. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1046 - Class Guitar II for Non-Majors**

This class will address basic techniques and concepts of playing the guitar, for non-majors. Students will gain a basic proficiency with regard to picking and fingerstyle technique, and learn essential contemporary harmony through the performance of etudes and songs. Prereq: PMUS 1045. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1047 - The Beatles for Fingerstyle Guitar**

This course will examine the music of The Beatles, through harmonic analysis, technical etudes and performance practice. Students will develop a basic proficiency with regard to specific fingerstyle techniques. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1050 - Voice Class I**

Fundamentals of voice production: posture, breath management and support, tone, resonance, diction, phrasing and interpretation. Development of technique, confidence, and control through group and solo singing. Development of repertoire that includes contemporary and commercial vocal styles. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1051 - Voice Class I for Non-Majors**

Voice technique and repertoire for non-music majors taught in a group setting. Students will learn basics of healthy singing technique and how to sing in multiple genres in both group and solo formats. For non-majors with little or no previous singing experience. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1060 - Voice Class II**

Fundamentals of voice production: posture, breath management and support, tone, resonance, diction, phrasing and interpretation. Extension of PMUS 1050, with opportunity to continue to develop individual skills in singing. Development of technique, confidence, and control through group and solo singing. Development of repertoire that includes contemporary and commercial vocal styles. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1061 - Voice Class II for Non-Majors**

Intermediate Voice technique for non-majors taught in a group setting. Students will learn elements of technique, style and repertoire geared toward non-majors. Some singing experience or successful completion of Voice I for Non-Music Majors required. Prereq: PMUS 1051 or permission from the instructor. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1100 - Music Theory I**

Study of the evolution of harmonic and melodic procedures, as derived from the common practice period of classical music, and their relationship to contemporary music concepts. Coreq: PMUS 1110 and PMUS 1023. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 1101 - Music Theory & Ear Training Lab**

Provides supplemental instruction and tutoring for students enrolled in Theory I and Ear Training Sight Singing I. Course activities include training in the following subject areas: scale formation and identification, chord spelling and identification, interval spelling and

identification, basic harmonic analysis and rhythmic dictation. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1105 - Music Theory I**

Study of the evolution of harmonic and melodic procedures, as derived from the common periods of practice, and their relationship to contemporary music concepts. Restriction: Restricted to General Music Minors, GMUS-MIN. Co-requisite PMUS 1115. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 1110 - Ear Training and Sight Singing I**

An aural skills laboratory course that reinforces the concepts taught in Music Theory I through interval, melodic, harmonic, and rhythmic dictation as well as the preparation and sight singing of music. Coreq: PMUS 1100 and PMUS 1023. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1115 - Ear Training and Sight Singing I**

An aural skills laboratory course that reinforces the concepts taught in Music Theory I through interval, melodic, harmonic, and rhythmic dictation as well as the preparation and sight singing of music. Restriction: Restricted to General Music Minors, GMUS-MIN. Co-requisite PMUS 1105. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1119 - Ear Training and Sight Singing I**

An aural skills laboratory course that reinforces the concepts taught in Music Theory I through interval, melodic, harmonic, and rhythmic dictation as well as the preparation and sight singing of music. Co-req: PMUS 1120; Restricted to MUSC-BS majors with a sub-plan of MST. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1120 - Music Theory I**

Study of the evolution of harmonic and melodic procedures, as derived from the common periods of practice, and their relationship to contemporary music concepts. Coreq: PMUS 1119; Restricted to MUSC-BS majors with a sub-plan of MST. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 1200 - Music Theory II**

The study of harmonic and melodic elements as they relate to modern, jazz, and commercial music. Topics include contemporary chord spelling, chord substitution, transposition, voice leading, harmonic analysis and modes. Prereq: PMUS 1023, 1100, and 1110. Coreq: PMUS 1210 and PMUS 1024. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PMUS 1210 - Ear Training and Sight Singing II**

An intermediate aural skills laboratory course that reinforces the concepts taught in Music Theory II through interval, melodic, harmonic, and rhythmic dictation as well as the preparation and sight singing of music.. Prereq: PMUS 1100 and PMUS 1110. Coreq: PMUS 1200 and PMUS 1023. Max hours: 1 Credit. **Semester Hours:** 1 to 1

## **PMUS 1211 - Ear Training and Sight Singing II**

An intermediate aural skills laboratory course that examines interval, melodic, harmonic, and rhythmic dictation as well as the preparation and sight singing of music. Prereq: PMUS 1119; Restricted to MUSC-BS majors with a sub-plan of MST. Max hours: 1 Credit. **Semester Hours:** 1 to 1

## **PMUS 1310 - Sight Reading and Improvisation**

Explores the techniques and concepts of instrumental jazz/commercial improvisation and beginning sight reading. Major concepts include understanding and interpreting the construction of jazz harmonic nomenclature and the mastery of the melodic elements of improvisation. Prereq: PMUS 1200, 2.0 credits from PMUS 1801 to PMUS 1823 (MIS Applied Lesson). Max hours: 2 Credits. **Semester Hours:** 2 to 2

## **PMUS 1400 - Group Applied Lessons**

Consists of group music lessons of up to four students per group. The course meets for one hour per week. 45 minutes will be in group format and 15 minutes will be rotating private instruction. Note: PMUS 1400 is only available to majors in the Music Industry Studies degree program. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Max hours: 2 Credits. **Semester Hours:** 2 to 2

## **PMUS 1410 - Bembe Ensemble (Beginning Percussion)**

Beginning Ensemble. Focus on basic percussion techniques and introductory ensemble playing utilizing Afro-Cuban literature. Comprised of percussion instruments of both definite and indefinite pitch. Introduces rhythmic sight-reading. Develops collaborative learning, aural skills and interactive multicultural awareness. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 1

## **PMUS 1420 - UCD A Cappella Voices Ensemble**

Beginning Ensemble. A cappella choir. This course will focus on choral singing to further the student's musical and vocal skills. Emphasis will be on successful preparation for the advanced a cappella groups. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 1430 - Solo Vocal Jazz Ensemble**

Beginning Ensemble. Focus on basic performance and stylistic skills in the jazz language. Students will learn basic and jazz vocal techniques and skills and their application in study and performance. Students will perform in solo and duo settings. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 1440 - Acoustic Guitar Ensemble**

Beginning Ensemble. This course explores the techniques and repertoire of acoustic guitar. Musical styles include: jazz, Latin, bluegrass, Renaissance, Baroque, tango and blues. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 1460 - Beginning Instrumental Ensemble**

Focus on basic performance and stylistic skills in the jazz, Latin, and blues genres. Students will learn basic instrumental techniques and their application in group performances. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1470 - Performance Practice Ensemble**

This beginning-level ensemble explores individual and group performance settings for first year audition-based MEIS students. Course skills include: performance protocol, presentation, self assessment and peer assessment. Repeatable. Max hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1480 - Improvisation I**

Introduction to the techniques and concepts of instrumental improvisation. Major concepts include identifying and improvising over common musical forms, understanding chord construction and chord/scale relationships, and developing an ability to improvise appropriately in a number of common styles. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **PMUS 1500 - General Recital**

This pass/fail course is a co-requisite for all students enrolled in applied music instruction. Students will evaluate and critique musical performances and presentations as well as develop an informed understanding of live musical performance as it pertains to diversity of genre and excellence in musical achievement. Restriction: Restricted to MUSC BS majors, and GMUS minors. Repeatable. Max hours: 12 Credits. **Semester Hours:** 1 to 1

### **PMUS 1502 - Applied Bass**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 1522 - Applied Bassoon**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 1532 - Applied Clarinet**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 1542 - Applied Bass Clarinet**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 1552 - Applied Flute**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 1562 - Applied French Horn**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 1572 - Applied Guitar**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 1574 - Applied Guitar, Singer/Songwriter**

Private instruction guitar specific to singer/songwriter majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Restricted: BS-MUSC SWR. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Student must be accepted as a Singer/Songwriter major in the music program and have declared guitar as their primary instrument. Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 1582 - Applied Banjo**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 1610 - Topics in Performance Music**

Various topics related to music performance. Repeatable. Max hours: 6 Credits. **Semester Hours: 1 to 1**

### **PMUS 1612 - Applied Drum Kit**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the

foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1620 - Topics: Performance Music II**

Various topics related to music performance. Repeatable. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **PMUS 1622 - Applied Oboe**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1630 - Topics: Performance Music III**

Various topics related to music performance. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 1632 - Applied World Percussion**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1642 - Applied Piano**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1644 - Applied Piano, Singer/Songwriter**



Private instruction in piano specific to singer/songwriter majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Restricted: BS-MUSC SWR. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Student must be accepted as a Singer/Songwriter major in the music program and have declared piano as their primary instrument. Repeatable. Max hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1652 - Applied Jazz Piano**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1662 - Applied Saxophone**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1672 - Applied Electronic Digital Instrument**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Restriction: Restricted to MUSC majors within the College of Arts and Media. Repeatable. Max hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1682 - Applied Trombone**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours:** 1 to 1

## **PMUS 1692 - Applied Trumpet**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

## **PMUS 1702 - Applied Violin**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

## **PMUS 1712 - Applied Viola**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

## **PMUS 1722 - Applied Cello**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

## **PMUS 1732 - Applied Voice**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 1734 - Applied Voice, Singer/Songwriter**

Private instruction in voice specific to singer/songwriter majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Restricted: BS-MUSC SWR. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Student must be accepted as a Singer/Songwriter major in the music program. Repeatable. Max hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1742 - Applied Tuba**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1762 - Applied Euphonium**

Private music lessons for audition-based music majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1801 - Appl Electric Bass, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1802 - Appl String Bass, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS

1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1803 - Applied Guitar, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1804 - Applied Percussion, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1805 - Applied Drum Kit, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1806 - Applied Piano, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1807 - Applied Jazz Piano, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available

to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1808 - Applied Voice, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1809 - Applied Electronic Digital Instrument, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1810 - Applied Trumpet, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1811 - Applied Trombone, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1812 - Applied Tuba, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the

foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1813 - Appl French Horn, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1814 - Applied Euphonium, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1815 - Applied Banjo, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1816 - Applied Bassoon, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1817 - Applied Clarinet, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1818 - Applied Flute, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1819 - Applied Saxophone, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1820 - Applied Oboe, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1821 - Applied Cello, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1822 - Applied Viola, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1823 - Applied Violin, Non-Juried**

Private music lessons for Music Industry Studies majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Note: Only available to non audition based music majors in the Music Industry Studies emphasis area. Coreq: PMUS 1500 and at least 7 non-applied lesson credits. Prereq: Acceptance to the MEIS program. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 1901 - Applied Electric Bass**

Private music lessons for General Music Minors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Restriction: Restricted to General Music Minors, GMUS-MIN. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1903 - Applied Guitar**

Private music lessons for General Music minors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Restriction: Restricted to General Music minors, GMUS-MIN. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1905 - Applied Drum Kit**

Private music lessons for General Music minors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Restriction: Restricted to General Music minors, GMUS-MIN. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1906 - Applied Piano**

Private music lessons for General Music minors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Restriction: Restricted to General Music Minors, GMUS-MIN. Max hours: 1 Credit. **Semester Hours:** 1 to 1



### **PMUS 1908 - Applied Voice**

Private music lessons for General Music minors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Restriction: Restricted to General Music minors, GMUS-MIN. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 1909 - Applied Electronic Digital Instrument**

Private music lessons for General Music minors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Restriction: Restricted to General Music minors, GMUS-MIN. **Semester Hours:** 1 to 1

### **PMUS 1923 - Applied Violin**

Private music lessons for General Music minors majors. Lessons emphasize developing fundamental technique, learning and performing standard repertoire, understanding the foundations of musicality, sight reading and developing rhythmic accuracy. Restriction: Restricted to General Music minors, GMUS-MIN. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 2020 - Prague's Musical Legacy**

Introduces students to composers and music of central Europe, with an emphasis on Czech music and culture. Additional topics include: aesthetics of central European film music; current trends in Slavic music; and the influence of the Czech language and history in music creation. Repeatable. Max hours: 6 Credits. **Semester Hours:** 3 to 3

### **PMUS 2050 - The Holistic Musician**

This course is designed to examine and explore the development and practice of health and wellness for musicians, identifying and establishing career objectives, and developing core strategies to thrive as a contemporary artist-musician. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 2092 - Commercial Piano Styles I**

This course will teach students how the piano is used in major commercial piano styles of the twentieth and twenty-first centuries. Students will develop a found of skills and knowledge that can be applied to professional music settings. Students must pass a piano audition or have permission from the instructor. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **PMUS 2093 - Commercial Piano Styles II**

This course will teach students in-depth stylistic performance skills, strategic improvisation, composition, and arranging. Students must pass a piano audition, or complete PMUS 2092, or have permission from the instructor. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **PMUS 2094 - Rhythm Section Techniques**

This course examines jazz and contemporary techniques for the rhythm section. Students will learn styles, skills and expectations for various rhythm instruments including guitar, bass, piano, and drum kit in order to improve musical communication, accompaniment skills and creativity. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 2095 - Commercial Guitar Styles and Theory - Harmony**

A comprehensive guitar course that focuses on harmonic theory specific to the guitar fingerboard. Topics include: chord voicing and inversions, jazz and commercial accompaniment styles including walking bass, bossa nova, funk and finger picking. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **PMUS 2096 - Commercial Guitar Styles and Theory - Melody**

A comprehensive guitar course that focuses on harmonic theory specific to the guitar fingerboard. Topics include: tetrachords, scales, modes, arpeggios, finger technique development and improvisation. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **PMUS 2097 - Commercial Singing I**

Fundamentals of voice production: posture, breath management and support, tone, resonance, diction, phrasing and interpretation. Development of contemporary solo vocal repertoire (pop, rock, jazz, rhythm and blues) and traditional styles. Training in all aspects of vocal performance needed for live performance and recording sessions (microphone technique, stage presence, appropriate vocal styles and delivery). Development of solid understanding of vocal technique and its application to all vocal styles. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **PMUS 2098 - Commercial Singing II**

Fundamentals of voice production: posture, breath management and support, tone, resonance, diction, phrasing and interpretation. Extension of PMUS 3010, with opportunity to continue to develop individual skills in commercial solo singing. Development of contemporary solo vocal repertoire (pop, rock, jazz, rhythm and blues) and traditional styles. Training in all aspects of vocal performance needed for live performance and recording sessions (microphone technique, stage presence, appropriate vocal styles and delivery). Development of solid understanding of vocal technique and its application to all vocal styles. Prereq: PMUS 3010. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **PMUS 2100 - Music Theory III**

Exposes students to the theoretical aspects of Western European classical music from the Baroque period to the Classical period. Emphasis is placed on the melodic aspects of classical music including the creation of melody and the combining of melodies into polyphonic structures. Prereq: PMUS 1200, 1210, and 1024. Coreq: PMUS 1025 and 2110. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 2110 - Ear Training and Sight Singing III**

An advanced laboratory course designed to help students listen to music analytically and to apply the harmonic principles learned in Music Theory III to the performance of music. Prereq: PMUS 1200 and PMUS 1210. Coreq: PMUS 2100 and PMUS 1023. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 2200 - Jazz Theory**

Explores music theory as it applies to the genres of jazz and popular music. The topics include the theory of jazz improvisation, an analysis of jazz and popular music forms, the transcription and analysis of pop/jazz rhythms and melodies, and chord substitutions. Prereq: PMUS 1200. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 2220 - Commercial Electronic Music Composition**

An investigation, analysis and application of contemporary electronic music compositional and production techniques in relation to commercial music and historical context. Prereq: PMUS 1200, PMUS 1210 and MUSC 2300. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 2310 - Introduction to Songwriting**

Studies the craft of songwriting. Emphasis is on the creation of original melodies and lyrics. A variety of non-classical contemporary musical styles are considered. Prereq: PMUS 1200, 2.0 credits from PMUS 1801 to PMUS 1823 (MIS Applied Lesson). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 2315 - Introduction to Songwriting**

Studies the craft of songwriting. Emphasis is on the creation of original melodies and lyrics. A variety of non-classical contemporary musical styles are considered. Prereq: PMUS 1105, 1115

and (1.0 credit from PMUS 1901-1923). Restriction: Restricted to General Music Minors GMUS-MIN. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 2320 - Songwriting Analysis**

This course presents an analysis of songs across genres and decades, including pop, rock, folk, singer/songwriter, punk, rap, indie, and bluegrass. Students isolate and compare lyrical, melodic, harmonic, rhythmic, and formal elements. Prereq: PMUS 1200. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 2330 - Mastering Your Creative Process**

This course is designed to learn how to foster, grow and maintain a healthy and functional relationship with creativity that can withstand the ebbs and flows of a professional music career. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 2400 - Performance Art and Experimental Music**

Introduces the history, philosophies and techniques of the European and American Avant-Garde theatrical performance and music. A study of music's various roles provides students with opportunities for creative application. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 2410 - Abakua Ensemble (Intermediate Percussion)**

Intermediate Ensemble. Focus on percussion techniques and ensemble playing utilizing Afro-Cuban literature. Comprised of percussion instruments of both definite and indefinite pitch. Assumes basic rhythmic sight-reading ability. Introduces theoretical concepts. Develops collaborative learning, aural skills and interactive multicultural awareness. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 2420 - Electro/Acoustic Ensemble**

Intermediate Ensemble. This course will study established methods used as agents of musical creativity in the practice of improvised music. Focus on real-time musical collaboration utilizing musical vocabularies from a wide range of sources. Instrumentation of many kinds may be utilized. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 2430 - Pop/Rock Ensemble**

Intermediate Ensemble. This course will focus on group rehearsals of contemporary music with challenging technical and vocal requirements. Students will gain experience in transcribing and creating simple arrangements, learning adequate musicality, performing presentation and

group cooperation. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 2435 - Hip Hop/R&B Ensemble**

Intermediate Ensemble. This course will focus on group rehearsals of hip hop and R&B with challenging technical and vocal requirements. Students will gain experience in transcribing and creating simple arrangements, learning adequate musicality, performing presentation and group cooperation. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 1

### **PMUS 2440 - Chamber Ensemble**

Intermediate Ensemble. Mixed instrumental group for string, wind, brass, piano, and percussion players. Students will develop sight-reading and improvisation skills and perform student originals and arrangements including repertoire from the Baroque period through the Avant-Garde with no stylistic limitations. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 2450 - Bluegrass Ensemble**

Ensemble designed to give students the opportunity to explore Bluegrass music and related folk/country styles through performance, listening and discussion. Important artists, repertoire, musical trends, and historical perspectives will be studied. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 2460 - Music Theatre Ensemble**

Beginning Ensemble. This course consists of group rehearsals of contemporary and original music theater works with a focus on techniques, technologies, and strategies for arranging. Score reading, transposition, ranges, orchestration and composition will be covered. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max hours: 6 Credit. **Semester Hours:** 1 to 1

### **PMUS 2461 - Musical Theater Ensemble Production**

Students will participate in a fully-staged musical theater production to be held every other year in the spring semester. This will include, but is not limited to: auditions, musical coachings, stage and/or acting coachings and dance. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max hours: 12 Credits. **Semester Hours:** 3 to 3

### **PMUS 2470 - Mobile Device Ensemble**

This ensemble will be comprised of students utilizing only laptop computers and mobile devices (e.g., iPads & iPhones) to create music. The ensemble will explore various contemporary styles including house, dance, ambient and other current electronic music. Repeatable. Max hours: 4 Credits. **Semester Hours:** 1 to 1

### **PMUS 2480 - Recording Studio Ensemble**

Recording Studio Ensemble prepares students for the musical challenges experienced by studio musicians. Students work to develop instrumental competence in a variety of styles, arrange original songs, execute flawless takes, and work effectively with diverse artists in a recording environment. Repeatable. Max hours: 3 Credits. **Semester Hours:** 1 to 1

### **PMUS 2490 - Django Jazz Ensemble**

Ensemble designed to give students the opportunity to explore the genre "gypsy jazz" and related styles through performance, listening and discussion. Important artists, repertoire, musical trends, and historical perspectives will be studied. Open to advanced instrumentalists and vocalists, audition based. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 2495 - New Electronics Orchestra Ensemble (NEO)**

A performance laboratory for the combination of electronic and acoustic instruments, including improvisation, composition, as well as live video and game sound design. Class requires either an audition or meeting with ensemble faculty. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 2502 - Applied Bass**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1502 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 2522 - Applied Bassoon**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits.

Prereq: PMUS 1522 (Two semesters). Repeatable. Max Hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 2532 - Applied Clarinet**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury.

Note: Students must be accepted as an audition-based music major. Instructor permission.

Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits.

Prereq: PMUS 1532 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 2542 - Applied Bass Clarinet**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury.

Note: Students must be accepted as an audition-based music major. Instructor permission.

Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits.

Prereq: PMUS 1542 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 2552 - Applied Flute**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury.

Note: Students must be accepted as an audition-based music major. Instructor permission.

Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits.

Prereq: PMUS 1552 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 2562 - Applied French Horn**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury.

Note: Students must be accepted as an audition-based music major. Instructor permission.

Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits.

Prereq: PMUS 1562 (Two semesters). Repeatable. Max Hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 2572 - Applied Guitar**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1572 (Two semesters). Repeatable. Max Hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 2582 - Applied Banjo**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1582 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 2612 - Applied Drum Kit**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1612 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 2622 - Applied Oboe**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1622 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 2632 - Applied World Percussion**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission.



Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits.  
Prereq: PMUS 1632 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 2642 - Applied Piano**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission.  
Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits.  
Prereq: PMUS 1642 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 2652 - Applied Jazz Piano**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission.  
Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits.  
Prereq: PMUS 1652 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 2662 - Applied Saxophone**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission.  
Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits.  
Prereq: PMUS 1662 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 2672 - Applied Electronic Digital Instrument**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission.  
Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits.  
Prereq: PMUS 1672 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

## **PMUS 2682 - Applied Trombone**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1682 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

## **PMUS 2692 - Applied Trumpet**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1692 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

## **PMUS 2702 - Applied Violin**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1702 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

## **PMUS 2712 - Applied Viola**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1712 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

## **PMUS 2722 - Applied Cello**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality,

developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1722 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 2732 - Applied Voice**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1732 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 2742 - Applied Tuba**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1742 (Two semesters). Repeatable. Max hours: 2 Credits. **Semester Hours: 1 to 1**

### **PMUS 2750 - Functional Guitar Skills: Acoustic Guitar Styles**

This course is designed to introduce students to the fundamental architecture and techniques of contemporary acoustic guitar styles. The first part of the course will explore the techniques, repertoire and styles of Fingerstyle Guitar, while the second half will be dedicated to Flatpicking styles and techniques. Repeatable. Max hours: 4 Credits. **Semester Hours: 2 to 2**

### **PMUS 2751 - Functional Guitar Skills: Electric Guitar Styles**

This course is designed to introduce students to the fundamental architecture and techniques of contemporary electric guitar styles with regard to studio and live performance situations. Students will also explore the business aspects of music performance including marketing, self-assessment, career strategies, recording, and press kits. Repeatable. Max hours: 4 Credits. **Semester Hours: 2 to 2**

### **PMUS 2762 - Applied Euphonium**

Private music lessons for audition-based music majors. Lessons emphasize developing proficient technique, learning and performing advanced repertoire, demonstrating musicality, developing rhythmic accuracy and improvising. Students perform in a general recital and jury. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1762 (Two semesters). Repeatable. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PMUS 2855 - Music in Cuba Study Abroad**

Explores Cuban music in its cultural context, examining the development of musical genres, and the current musical and cultural landscape. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 3060 - Ensemble Engineer**

This engineer position is designed to provide audio support for a various performing ensembles. Duties include live audio reinforcement during concerts and rehearsals, audio archiving, organization and equipment management. Enrollment is limited to one semester for non-audition track students and two semesters for audition-track students. Prereq: MUSC 4530. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 3070 - Ensemble Manager**

This manager position is designed to provide booking, promotional and organizational support for various performing ensembles. Enrollment is limited to one semester for non-audition track students and two semesters for audition-track students. Prereq: MUSC 3690. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 1

### **PMUS 3100 - US Music: Social & Political Impact**

Examines and describes the social meaning of American music with particular reference to the roles of major ethnic groups in the creation of this music and the way that the music reveals attitudes toward these groups. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 3110 - Social and Political Implications of American Music**

Examines and describes the social meaning of American music with particular reference to the roles of major ethnic groups in the creation of this music, and the way that the music reveals attitudes toward these groups. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 3200 - Popular Music Performance Skills**

Students develop live performance skills including expression, stage presence and creating energy on stage, as well as connecting with the audience. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **PMUS 3210 - Introduction to Teaching Private Music Lessons**

Prepares students to teach private music lessons. Includes a survey of teaching styles from around the world, exercises, guest lectures, practical guidance for establishing a teaching studio and student research presentations. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 3220 - Vocal Pedagogy**

Students will develop a working knowledge of postural, breathing, articulatory, and vocal anatomy, vocal hygiene, and methodology prior to teaching voice in to prevent harm. Students will learn how to listen critically and develop intuition, analytical, and diagnostic skills. Restriction: Restricted to Music majors. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **PMUS 3300 - Advanced Jazz Improvisation**

Explores the techniques and concepts of instrumental jazz/commercial improvisation and sight reading. Major concepts include understanding and interpreting the construction of jazz harmonic nomenclature and the mastery of the melodic elements of improvisation. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **PMUS 3310 - Intermediate Songwriting**

Presents concepts of songwriting that build upon those presented in MUSC 2300. Students are expected to understand and discuss musical concepts and lyric structure and use these concepts in the creation of original songs. Prereq: PMUS 1024, PMUS 1200, and PMUS 1210. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 3320 - Popular Music Arranging**

This course will focus on techniques, technologies and strategies for contemporary arranging. Students score original compositions for various instrumentation using notation software. Prereq: PMUS 1200, PMUS 1210, and PMUS 1024. Restriction: Restricted to MUSC-BS majors within the College of Arts and Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 3330 - Advanced Vocal Improvisation**

Provides study of harmony, style and advanced improvisation techniques for vocalists. Course activities include study of scat singing, syllables, accents, rhythmic patterns, and phrasing over standard chord changes in several genres. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **PMUS 3340 - Commercial Songwriting**

This course is designed to explore songwriting for publishing and that supports moving picture. Students will gain an understanding and have practical application of analyzing, understanding, writing and pitching music for publishing, film, tv and advertisement. Prereq: PMUS 3310. Restriction: Restricted to Sophomore standing or higher. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 3410 - Rumba Ensemble (Advanced Percussion)**

Advanced Ensemble. Focus on percussion techniques and ensemble playing utilizing Afro-Cuban literature. Comprised of percussion instruments of both definite and indefinite pitch. Assumes intermediate rhythmic sight-reading ability. Develops collaborative learning and awareness of drumming as universal language. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 3430 - Jazz Combo Ensemble**

Advanced Ensemble. Instrumental jazz group. This course will focus on group rehearsals of bebop, swing, funk, & fusion. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 3450 - Singer/Songwriter Ensemble**

Advanced Ensemble. Focus on student compositions of original songs with lyrics and instrumental accompaniment including creation of lead sheets for band performances. Individual and group songwriting is explored. Students participate in community-building activities including community engagement and a songwriting retreat. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 3460 - Ninth Street Singers Ensemble**

Signature Ensemble. Elite a cappella mixed choir. This course will focus on group rehearsals of various genres of vocal ensemble music, including pop, rock, jazz, musical theater, and gospel. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 3470 - Piano Trio Ensemble**

Advanced Piano, Bass and Drum Students will create piano trios, receive feedback from faculty in weekly coaching sessions, and have professional opportunities such as gigs and recordings. Contexts include: Standard Jazz, Contemporary Jam Band and original arrangements. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 1

### **PMUS 3502 - Applied Bass**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1502 and PMUS 2502 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3522 - Applied Bassoon**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1522 and PMUS 2522 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3532 - Applied Clarinet**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1532 and PMUS 2532 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3542 - Applied Bass Clarinet**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1542 and PMUS 2542 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3552 - Applied Flute**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1552 and PMUS 2552 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3562 - Applied French Horn**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1562 and PMUS 2562 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3572 - Applied Guitar**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1572 and PMUS 2572 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3582 - Applied Banjo**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1582 and PMUS 2582 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2



### **PMUS 3612 - Applied Drum Kit**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1612 and PMUS 2612 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3622 - Applied Oboe**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1622 and PMUS 2622 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3632 - Applied World Percussion**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1632 and PMUS 2632 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3642 - Applied Piano**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1642 and PMUS 2642 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3652 - Applied Jazz Piano**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1652 and PMUS 2652 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3662 - Applied Saxophone**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1662 and PMUS 2662 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3672 - Applied Electronic Digital Instrument**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1672 and PMUS 2672 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3682 - Applied Trombone**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1682 and PMUS 2682 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3692 - Applied Trumpet**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1692 and PMUS 2692 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3702 - Applied Violin**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1702 and PMUS 2702 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3712 - Applied Viola**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1712 and PMUS 2712 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3722 - Applied Cello**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1722 and PMUS 2722 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3732 - Applied Voice**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1732 and PMUS 2732 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3742 - Applied Tuba**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1742 and PMUS 2742 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3762 - Applied Euphonium**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing and performing repertoire, demonstrating a high level of musicality, cultivating superior performance practice, identifying musical goals and preparing and performing a junior recital. Note: Students must be an audition-based music major and accepted to performance emphasis. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1762 and PMUS 2762 (two semesters each), and successful completion of sophomore proficiency. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3772 - Applied Singer/Songwriter**

This is a 2-credit course consisting of one-on-one, hour-long weekly lessons in songwriting and performance skills. Aspects of transcription, analysis, and career development will be incorporated. Co-requisites - PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 3820 - Music History Modules**

This modular course surveys various popular, Western European, and world music styles. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 1

### **PMUS 3825 - Real History of Rock and Roll**

Examines the historical and social framework developments in music from its roots in country, through jazz and blues to current trends. Special emphasis is given to guest lecturers and their expertise performing, covering and presenting the music. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 3827 - History Of Jazz**

This course will give students an inside look at the history and radical changes brought about by the musicians, technology and the social interplay between US social history and jazz music by examining the music & musicians that performed it. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 3828 - History of Bluegrass**

This course will cover the history of the music and musicians that contribute to the development of the Bluegrass musical style. Topics to be covered include early country music, traditional bluegrass, and contemporary bluegrass. Restriction: Restricted to students with a junior or senior standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 3829 - A Survey of Heavy Metal**

A history of heavy metal from the 1970's to present day exploring how religion, politics, community, and censorship have helped to shape this unique genre of music. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 3830 - History and Literature of Music I**

This course provides a historical perspective of Western music literature from the medieval through the classical era. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 3831 - History and Literature of Music II**

This course provides a historical perspective of Western music literature from the Romantic era through the present day. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 3832 - Music in Culture**

A broad introduction to music as a human phenomenon, this course examines how diverse musics live in and as culture. Through a study of diverse musical elements, genres, periods, styles, and composers in jazz, folk, popular, and world music traditions. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 3835 - History of Electronic Music**

This course will give students an inside look at the history and radical changes brought about by the musicians, technology and the social interplay between US social history and electronic music by examining the music & musicians that performed it. Restriction: Restricted to sophomore standing or higher. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 3840 - Independent Study: PMUS**

Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **PMUS 4060 - Music Theory Analysis**

Students analyze the harmonic, melodic, and formal aspects of the music from various musical time periods and genres which include Baroque, Classical, Romantic, Contemporary Classical, jazz and popular music. Prereq: PMUS 2110 and 2200. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 4200 - Senior Recital Project**

The capstone course for performance majors that coincides with their senior recital. The project focuses on musical and thematic material from the student's senior recital and may include: historical research, theoretical analysis, transcriptions and creation of a digital portfolio. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **PMUS 4310 - Advanced Songwriting**

Students will continue to learn the craft of songwriting with focus on the skills of advanced lyric writing technique. Students will expand their knowledge of theoretical aspects of harmony and melody. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMUS 4410 - Claim Jumpers Ensemble**

Signature Ensemble. The Claim Jumpers will focus on group rehearsals of significant traditional jazz literature, masterworks of classic jazz of the 1920's, and creativity within the traditional jazz genre at the highest level. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 4430 - Guitar Ensemble**

Signature Ensemble. Advance jazz guitar group. This course will focus on group rehearsals of bebop and fusion. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 4440 - Voz de la Clave**

Signature Ensemble. This ensemble performs Salsa and Afro-Caribbean music. Ensemble time is spent rehearsing repertoire and learning about Latin music concepts. Prereq: Audition or meeting with ensemble faculty. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 4460 - Mix A Cappella Ensemble**

Advanced a cappella performing group, working in a wide range of stylistic offerings. Enrollment by audition only. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 4461 - UCD Mix Ensemble Management**

This class focuses on management activities for the "UCD Mix" A Capella ensemble, including website content, arranging, choreography and recording roles as assigned by the professor. Coreq: PMUS 4460. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 1 to 1

### **PMUS 4470 - Lark/Advanced A Cappella Ensemble**

Lark is an advanced a cappella ensemble for female identifying individuals. Admission to this group is by audition only. Members must have strong sight reading skills, advanced musicianship and performance skills. Lark performs several times per semester. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 1

### **PMUS 4502 - Applied Bass**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1502, PMUS 2502, PMUS 3502 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4522 - Applied Bassoon**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1522, PMUS 2522, PMUS

3522 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4532 - Applied Clarinet**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1532, PMUS 2532, PMUS 3532 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4542 - Applied Bass Clarinet**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1542, PMUS 2542, PMUS 3542 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4552 - Applied Flute**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1552, PMUS 2552, PMUS 3552 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4562 - Applied French Horn**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1562, PMUS 2562, PMUS



3562 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4572 - Applied Guitar**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1572, PMUS 2572, PMUS 3572 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4582 - Applied Banjo**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1582, PMUS 2582, PMUS 3582 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4600 - Topics in Music Performance**

Various topics related to music performance. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **PMUS 4612 - Applied Drum Kit**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1612, PMUS 2612, PMUS 3612 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4622 - Applied Oboe**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1622, PMUS 2622, PMUS 3622 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4632 - Applied World Percussion**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1632, PMUS 2632, PMUS 3632 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4642 - Applied Piano**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1642, PMUS 2642, PMUS 3642 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4652 - Applied Jazz Piano**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1652, PMUS 2652, PMUS 3652 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4662 - Applied Saxophone**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1662, PMUS 2662, PMUS 3662 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4672 - Applied Electronic Digital Instrument**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1672, PMUS 2672, PMUS 3672 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4682 - Applied Trombone**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1682, PMUS 2682, PMUS 3682 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4692 - Applied Trumpet**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1692, PMUS 2692, PMUS 3692 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4702 - Applied Violin**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1702, PMUS 2702, PMUS 3702 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4712 - Applied Viola**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1712, PMUS 2712, PMUS 3712 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4722 - Applied Cello**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1722, PMUS 2722, PMUS 3722 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4732 - Applied Voice**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1732, PMUS 2732, PMUS 3732 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4742 - Applied Tuba**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1742, PMUS 2742, PMUS 3742 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4762 - Applied Euphonium**

Private music lessons for audition-based music majors. Lessons emphasize perfecting musical technique, memorizing professional-level repertoire, demonstrating an expert level of musicality, analyzing repertoire, achieving a musical identity, cultivating superior performance practice and preparing and performing a senior recital. Note: Students must be accepted as an audition-based music major. Instructor permission. Coreq: PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson credits. Prereq: PMUS 1762, PMUS 2762, PMUS 3762 (two semesters each), and successful completion of Junior Recital. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4772 - Applied Singer/Songwriter**

This is a 2-credit course consisting of one-on-one, hour-long weekly lessons in songwriting and performance skills. Aspects of transcription, analysis, and career development will be incorporated. Plan Code: MUSC-BS SWR; Co-requisites - PMUS 1500, enrollment in an ensemble and at least 7 non-applied lesson. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 2

### **PMUS 4840 - Independent Study: PMUS**

Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

## **Philosophy**

### **PHIL 1012 - Introduction to Philosophy: Relationship of the Individual to the World**

Introductory course in philosophy that focuses on some of the central questions of philosophy, including theories of reality and the nature of knowledge and its limits. The knowledge of these areas is essential to the student for informed participation in the resolution of contemporary problems in today's society. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-AH3 **Semester Hours:** 3 to 3

### **PHIL 1020 - Introduction to Ethical Reasoning**

Studies ethical problems and forms of ethical reasoning within the larger context of social and political philosophy. Specific ethical problems may be addressed, such as poverty, famine, abortion, punishment, animal rights, and environmental sustainability. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-AH3 **Semester Hours:** 3 to 3

### **PHIL 1111 - First Year Seminar**

Restriction: Restricted to Freshman level students. Term offered: Fall. Repeatable. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **PHIL 1700 - Philosophy and the Arts**

Considers philosophical questions involved in the analysis and assessment of artistic expressions and of the objects with which the arts, including the literary arts, are concerned. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 2441 - Logic, Language and Scientific Reasoning**

Intro course in argumentation, critical thinking and scientific reasoning. Covers rules of logical inference, informal fallacies, problem solving, and probabilistic reasoning. Enhances analytical and critical thinking skills tested on LSAT and MCAT, central to advancement in sciences, and broadly desired by employers. Max Hours: 3 Credits. Term offered: spring, summer, fall. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-AH3. **Semester Hours:** 3 to 3

### **PHIL 3002 - Ancient Greek Philosophy**

History of ancient Greek thought, including traditional myth, pre-Socratic fragments, Plato's dialogues, and Aristotle's systematic philosophy. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3022 - Modern Philosophy**

History of philosophy from Descartes through Kant. Cross-listed with PHIL 5022. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3030 - Philosophies of the Good Life & Happiness**

Examines concepts and theories of happiness and their application in everyday living as discussed by major philosophers since antiquity (e.g., Aristotle, Kant, Nietzsche). Also considers critiques of Happiness (e.g., Freud, Schopenhauer). Recommended preparation: PHIL 1012 or PHIL 1020. Term offered: summer. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3032 - Twentieth Century Analytic Philosophy**

Surveys representative philosophers, methods, and problems in the 20th century analytic tradition. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3150 - History of Ethics**

Surveys the ethical thought of major figures in the history of philosophy, beginning with Plato and ending with the 19th century. Examples: Aristotle, Hume, Kant and Mill. (Class readings of primary philosophical texts.) Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3200 - Social and Political Philosophy**

Examines basic issues in social and political philosophy, including justice, freedom, individuality, power and community. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3250 - Business Ethics**

Surveys some of the major moral problems which arise in business, such as the nature and scope of the moral responsibilities of corporations, affirmative action, and truth in advertising. Begins with a study of moral reasoning, ethical theory, and the challenges of applying ethical theory. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3280 - War and Morality**

Attempts to identify and analyze some of the major moral issues of war. When is a war just, when is it not? What are morally acceptable rules of engagement? What, if anything, justifies violating them? How does one evaluate terrorism and war against terrorism? What are moral alternatives to the violence of war? Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3340 - Investigating Nature: Introduction to the Philosophy of Science**

This course is designed to introduce students to the Philosophy of Science. (No background in philosophy is required.) Philosophy of Science is concerned with how best to use observation and experiment to learn about the world, whether we are investigating fundamental physical structures, the complex operations of biological organisms, or the social dynamics of human groups. Drawing on both historical and contemporary works, we will seek to understand, among other topics, what makes scientific inquiry distinct from other forms of human learning, what accounts for the credibility and objectivity of scientific claims, the influence of psycho-social biases on observation and theory formation, as well as whether accepting a scientific theory, explanation or hypothesis means that we think it is true. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3350 - Metaphysics**

Studies major theories of reality, including topics such as the nature of substance, space and time, and universals and particulars. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3360 - Epistemology**

Study of major theories of knowledge, including such problems as perception and the distinction between belief and knowledge. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3410 - Asian Philosophies and Religions**

We in the Western world encounter a vastly different world, a radically different "universe of meaning," when we examine the traditions of the East. Even what we tacitly assume to be "real" is claimed by the Hindus and Buddhists of India to be a grand illusion. The world of China is, again, very different from India. An examination of Tibetan and Japanese religious forms will conclude our study of Asian thought. Cross-listed with RLST 3410. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **PHIL 3430 - Environmental Ethics**

While human industry/technology creates enormous material prosperity, it can result in devastating environmental damage. This course analyzes the moral values, consequences and duties implied in relationships between human beings, animals and ecological systems, while seeking out new and ethical approaches. Cross-listed with PHIL 5430, HUMN 5430 and SSCI 5430. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3440 - Introduction to Symbolic Logic**

Covers truth functional and quantificational logic through polyadic first order predicate calculus and theory of identity. Attention is given to such problems in metatheory as proofs of the completeness and consistency of systems of logic. Prereq: A passing grade in PHIL 2441 or MATH 3000 or permission from the instructor is required in order for students to enroll in this course. Cross-listed with MATH 3440. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3441 - Philosophical Reasoning Skills**

This course provides Philosophy majors and other philosophically interested students with the skills and tools necessary for effectively navigating philosophical discussions. In this course we will cover issues such as validity and soundness, as well as several systems useful for demonstrating validity. The course will in addition address important issues in the philosophy of language, including the very important question of definitions, as well as the use of thought experiments and avoidance of informal fallacies. Finally, since philosophical reasoning



increasingly involves knowledge of the methods of scientific reasoning, those skills will also be included in the course. Cross-listed with PHIL 5441. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3500 - Ideology and Culture: Racism and Sexism**

Surveys the nature and role of racism and sexism. Topics may include ideology theory, naturalism, the equal protection clause, recent scientific discussion, sociolegal history, and social constructionism. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3550 - Philosophy of Death and Dying**

Historical overview of the metaphysical question of whether there is life after bodily death, beginning with classical arguments through the current debate over such phenomena as near death experiences and deathbed visions. Also focuses on ethical controversies such as suicide, euthanasia, and capital punishment, and the efficacy of philosophical consolations for grief. Strongly Recommended: Three hours of philosophy; preferably PHIL 1012 but if the student does not have coursework, consulting with the instructor prior to registration is strongly recommended. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3760 - Kant**

A close study of Immanuel Kant's revolutionary thought, focusing on Kant's ontology, epistemology, and ethical theory, as they are articulated in his Critique of Pure Reason and Critique of Practical Reason. Strongly Recommended: PHIL 3002 or 3022, a minimum grade of "C" in each previous philosophy course. If the student does not have this coursework, consulting with the instructor prior to registration is strongly recommended. Cross-listed with PHIL 5830. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 3939 - Internship**

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: Students must have junior standing and at least a 2.75 GPA and must work with Experiential Learning Center advising to complete a course contract and gain approval. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **PHIL 3995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of

Global Education. Department consent required. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 9

### **PHIL 4000 - 19th and 20th Century Continental Philosophy**

A seminar on key problems and thinkers in the nineteenth & twentieth century continental philosophical traditions and their contemporary significance. Cross-listed with PHIL 5000, HUMN 5000 and SSCI 5000. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4101 - Pragmatism: Classical American Philosophy**

The most significant philosophical tradition born in the United States is pragmatism. Examines several of the most important classical works of this tradition, the influence of thinkers who have helped to shape pragmatism, and the contemporary relevance of this tradition. Figures who may be included are: Emerson, Pierce, Royce, James, Dewey, Mead and Rorty. Prereq: PHIL 3002 or 3022 and a minimum grade of C in each previous philosophy course are strongly recommended, but if the student does not have this coursework, consulting with the instructor prior to registration is strongly recommended. Cross-listed with PHIL 5101, HUMN 5101, SSCI 5101. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4150 - Twentieth Century Ethics**

Surveys representative philosophers, methods, and/or problems in 20th century ethics. Prereq: PHIL 3002 or 3022 and a minimum grade of C in each previous philosophy course are strongly recommended, but if the student does not have this coursework, consulting with the instructor prior to registration is strongly recommended. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4200 - Philosophical Problems and Contemporary Culture**

Issues and controversies in contemporary culture, their relation to modern theories of society, and their manifestations in the arts, science and technology, education, religion and ethics. Prereq: PHIL 3002 or 3022, and a minimum grade of C in each previous philosophy course are strongly recommended, but if the student does not have coursework, consulting with the instructor prior to registration is strongly recommended. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4220 - Aesthetics and the Philosophy of Art**

Introduction to major theories of aesthetics and contemporary discussions of problems in aesthetics and the philosophy of art, including topics such as: the nature of art, interpretation and evaluation in art. Cross-listed with PHIL 5220 and HUMN 5220. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4230 - Postmodernism**

Traces the history of a set of ideas collectively known as postmodern. Disrupting traditional frameworks of knowledge, these concepts have had an enormous impact on the social sciences, the humanities, and the arts. Course readings expose students to the cross-disciplinary impact of postmodernism on theory, content, and method. Prereq: Upper division standing, PHIL 3002 or 3022 and a minimum grade of C in each previous philosophy course are strongly recommended, but if the student does not have this coursework, consulting with the instructor prior to registration is strongly recommended. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4242 - Bioethics**

Examines some of the major moral issues confronting the nation's health care system. The class will search for solutions to such problems as financing health care for those unable to do so on their own, determining the extent of a patient's right to both refuse and demand certain types of medical treatment, and allocating scarce medical resources such as lifesaving vital organs. The springboard for examining these issues will be the doctor or patient relationship framed by the moral principles of respect for persons and beneficence. Prereq: PHIL 3002 or 3022 and a minimum grade of C in each previous philosophy course are strongly recommended, but if the student does not have this coursework, consulting with the instructor prior to registration is strongly recommended. Cross-listed with PHIL 5242, SSCI 5242, HUMN 5242. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4260 - Philosophy of Law**

Surveys theoretical positions on the nature of law, with particular emphasis on American law. Prereq: PHIL 3002 or 3022 and a minimum grade of C in each previous philosophy course are strongly recommended, but if the student does not have this coursework, consulting with the instructor prior to registration is strongly recommended. Cross-listed with PHIL 5260. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4300 - Philosophy of Mind**

Consideration of the problems in the philosophy of mind, such as the mind-body problem, the problem of our knowledge of other minds, the compatibility of free will and determinism, and discussion of such concepts as action, intention, motive, desire, enjoyment, memory, imagination, dreaming and self-knowledge. Strongly Recommended: PHIL 3002 or 3022, a minimum grade of "C" in each previous philosophy course. If the student does not have this coursework, consulting with the instructor prior to registration is strongly recommended. Cross-listed with PHIL 5300. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4308 - Contemporary Feminist Thought**

This course explores contemporary feminist thought in philosophy and literature in the 20th and 21st centuries. Topics include lesbianism, black feminism, Chicana feminism, transgender

identity, women and work and others. Cross-listed with ENGL 4308, ENGL 5308, PHIL 5308, WGST 4308, WGST 5308. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4350 - Philosophy of Science**

This course examines some of the central philosophical questions concerning the nature of scientific investigation, such as the logical relation of evidence to hypothesis, the objective adjudication of competing hypotheses, the logical function of modeling in empirical inquiry, the criterion for a classificatory system to underwrite induction and explanation, the explanatory relationships between the differing sciences, as well as the theoretical and pragmatic function of scientific law and its relationship to explanation. Cross-listed with PHIL 5350. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4500 - Feminist Philosophy**

Seminar on key debates & figures in historical & contemporary feminist philosophy. Topics may include: rights, embodiment, gender, sexuality, race, reason, & violence. Figures may include: Wollstonecraft, Stanton, Beauvoir, Judith Butler, and bell hooks. Crosslisted with PHIL 5500, WGST 4500 & 5500. **Semester Hours:** 3 to 3

### **PHIL 4600 - Philosophy of Religion**

Nature of religion and methods of studying it. Cross-listed with HUMN 5600, PHIL 5600, RLST 4060, 5060, and SSCI 5600. Term offered: summer. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4720 - Eastern Religious Thought**

Parallels the course in Western religious thought. The great religious traditions of the East, including Hinduism, Buddhism, Confucianism, and Taoism, are examined as they are presented in the writings of key philosophical representatives of each tradition. Cross-listed with RLST 4080. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4730 - Philosophy and Literature**

Considers the philosophical dimensions of literature. Strongly Recommended: PHIL 3002 or 3022, and a minimum grade of "C" in each previous philosophy course. If the student does not have this coursework, consulting with the instructor prior to registration is strongly recommended. Cross-listed with PHIL 5730, ENGL 4735 and 5735. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4755 - Philosophical Psychology**

Explores debates about psyche and body, mind and world, self and others, and consciousness and nature. Examines the philosophical questions related to those debates that arise within theories of perception, affect and cognition offered by influential psychological models. Cross-listed with HUMN 5750, SSCI 5750 and PHIL 5755. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4780 - Heidegger**

Studies the thought of Martin Heidegger, one of the most important philosophers of the 20th century. Includes texts from both Heidegger's early and later periods, and focuses on his analyses of human subjectivity and being. Strongly Recommended: PHIL 3002 or 3022, a minimum grade of "C" in each previous philosophy course. If the student does not have this coursework, consulting with the instructor prior to registration is strongly recommended. Cross-listed with PHIL 5780. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4790 - Nietzsche**

A close study of Nietzsche's philosophical writings, with attention to his significance for philosophy in the 20th century and beyond. Cross-listed with PHIL 5790. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4800 - Plato**

A careful study of Plato's writings, emphasizing the dialogue form, and discussion of Plato's significance for the history of ethics, political theory, psychology, metaphysics and epistemology. Strongly Recommended: PHIL 3002 or 3022, a minimum grade of "C" in each previous philosophy course. If the student does not have this coursework, consulting with the instructor prior to registration is strongly recommended. Cross-listed with PHIL 5800. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4810 - Aristotle**

Examines Aristotle's systematic philosophy and discusses its contributions to logic, epistemology, physics, psychology, metaphysics, ethics and political theory. Strongly Recommended: PHIL 3002 or 3022, a minimum grade of "C" in each previous philosophy course. If the student does not have this coursework, consulting with the instructor prior to registration is strongly recommended. Cross-listed with PHIL 5810. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4812 - Special Topics in Philosophy**

Strongly Recommended: PHIL 3002 or 3022, a minimum grade of "C" in each previous philosophy course. If the student does not have this coursework, consulting with the instructor

prior to registration is strongly recommended. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 3 to 3

### **PHIL 4833 - Existentialism**

Examines one of the most influential movements in recent European thought, beginning with existentialism's 19th century roots, and continuing on to the existentialist philosophers of the 20th century. Figures covered may include Dostoyevsky, Kierkegaard, Nietzsche, Heidegger, Sartre and de Beauvoir. Strongly Recommended: PHIL 3002 or 3022, a minimum grade of "C" in each previous philosophy course. If the student does not have this coursework, consulting with the instructor prior to registration is strongly recommended. Cross-listed with PHIL 5833, HUMN 5833 and SSCI 5833. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4840 - Independent Study: PHIL**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **PHIL 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **PHIL 4900 - John Dewey**

John Dewey was one of the most important of the American philosophers and public intellectuals of the twentieth century. Topics may include Dewey's philosophical naturalism, pragmatist epistemology, process metaphysics and philosophies of experience, aesthetics, religion, technology and democracy. Cross-listed with PHIL 5900. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 4920 - Philosophy of Media and Technology**

A philosophical examination of interrelationships between contemporary media, technology, and their impacts upon character of contemporary life and values. Topics may include ethics, epistemology, democracy, advertising, media literacy and criticism. Cross-listed with PHIL 5920, HUMN 5920, SSCI 5920. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PHIL 4950 - Honors Thesis**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Repeatable. Max hours: 6 Credits.

**Semester Hours:** 3 to 6

## **PHIL 5000 - 19th and 20th Century Continental Philosophy**

A seminar on key problems and thinkers in the nineteenth & twentieth century continental philosophical traditions and their contemporary significance. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4000, HUMN 5000 and SSCI 5000. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PHIL 5013 - Methods and Practices of Graduate Interdisciplinary Humanities**

The second of three required Master of Humanities core courses, this course introduces beginning graduate students to methodologies and intellectual frameworks for gathering, organizing, and developing interdisciplinary research. Focus is on the application of theories and methods of research, interpretation and analysis in humanistic research through readings that explore philosophical and cultural discourses have altered theory and method. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with HUMN/SSCI 5013. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PHIL 5020 - Foundations and Theories of Interdisciplinary Social Science**

The first of the Master of Social Science core courses, this course exposes beginning graduate student to critical, key analytic models, and their application in disciplines that comprise the social sciences (classical anthropology, sociology, sociology of religion, philosophy of history, political theory, classical psychology, etc.) for the purpose of graduate-level interdisciplinary social science research. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with SSCI 5020 and HUMN 5020. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PHIL 5040 - Skepticism**

Considers radical skepticism in the form of Sextus Empiricus' Outlines of Pyrrhonism. Following Peter Suber's "Essay on Classical Skepticism," the course also looks at historical responses to Pyrrhonian skepticism, especially in theories of belief. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4040. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5101 - Pragmatism: Classical American Philosophy**

The most significant philosophical tradition born in the United States is pragmatism. Examines several of the most important classical works of this tradition, the influence of thinkers who have helped pragmatism, and the contemporary relevance of this tradition. Figures who may be included in this course are: Emerson, Pierce, Royce, James, Dewey, Mead and Rorty. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4101, SSCI 5101, HUMN 5101. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5220 - Aesthetics and the Philosophy of Art**

Introduction to major theories of aesthetics and contemporary discussions of problems in aesthetics and the philosophy of art, including topics such as: the nature of art, interpretation and evaluation in art. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4220 and HUMN 5220. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5242 - Bioethics**

Examines some of the major moral issues confronting the nation's health care system. The class will search for solutions to such problems as financing health care for those unable to do so on their own, determining the extent of a patient's right to both refuse and demand certain types of medical treatment, and allocating scarce medical resources such as lifesaving vital organs. The springboard for examining these issues will be the doctor or patient relationship framed by the moral principles of respect for persons and beneficence. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4242, HUMN 5242, SSCI 5242. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5260 - Philosophy of Law**

Surveys theoretical positions on the nature of law, with particular emphasis on American law. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4260. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5300 - Philosophy of Mind**



Consideration of the problems in the philosophy of mind, such as the mind-body problem, the problem of our knowledge of other minds, the compatibility of free will and determinism, and discussion of such concepts as action, intention, motive, desire, enjoyment, memory, imagination, dreaming and self-knowledge. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4300. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5308 - Contemporary Feminist Thought**

This course explores contemporary feminist thought in philosophy and literature in the 20th and 21st centuries. Topics include lesbianism, black feminism, Chicana feminism, transgender identity, women and work and others. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with ENGL 4308, ENGL 5308, PHIL 4308, WGST 4308, WGST 5308. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5350 - Philosophy of Science**

This course examines some of the central philosophical questions concerning the nature of scientific investigation, such as the logical relation of evidence to hypothesis, the objective adjudication of competing hypotheses, the logical function of modeling in empirical inquiry, the criterion for a classificatory system to underwrite induction and explanation, the explanatory relationships between the differing sciences, as well as the theoretical and pragmatic function of scientific law and its relationship to explanation. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4350. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5360 - American Legal Process**

Introduces students to basic issues in American jurisprudence as well as to the elements and dynamics of the modern American legal system. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4360. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5430 - Environmental Ethics**

While human industry/technology creates enormous material prosperity, it can result in devastating environmental damage. This course analyzes the moral values, consequences and duties implied in relationships between human beings, animals and ecological systems, while seeking out new and ethical approaches. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 3430, HUMN 5430 and SSCI 5430. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PHIL 5441 - Philosophical Reasoning Skills**

This course provides Philosophy majors and other philosophically interested students with the skills and tools necessary for effectively navigating philosophical discussions. In this course we will cover issues such as validity and soundness, as well as several systems useful for demonstrating validity. The course will in addition address important issues in the philosophy of language, including the very important question of definitions, as well as the use of thought experiments and avoidance of informal fallacies. Finally, since philosophical reasoning increasingly involves knowledge of the methods of scientific reasoning, those skills will also be included in the course. Cross-listed with PHIL 3441. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PHIL 5470 - Concepts of the Soul**

Asks the questions: What is the nature of the human being? What makes us "human?" Do humans have a "soul?" What is its nature? Is it different from the "spirit?" What is its ultimate fate? Examines the various theories put forward by philosophers of both Eastern and Western traditions. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4470 and RLST 4440, 5440. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PHIL 5480 - Perspectives on Good and Evil**

Examines "problem of evil" as formulated in the philosophical tradition. Presents classical formulation of the problem, traditional solutions & classical critiques of each answer. Considers perspectives of various religious orientations, which deal differently with the question of suffering. Restriction: Restricted to students with Graduate standing. Cross-listed with PHIL 4480, RLST 4480/5480. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PHIL 5500 - Feminist Philosophy**

Seminar on key debates & figures in historical & contemporary feminist philosophy. Topics may include: rights, embodiment, gender, sexuality, race, reason, & violence. Figures may include: Wollstonecraft, Stanton, Beauvoir, Judith Butler, and bell hooks. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Crosslisted with PHIL 4500, WGST 4500 & 5500. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PHIL 5550 - Paris 1910: Art, Philosophy and Psychology**

Traces the influences of philosophy, psychology, and art in the English, French, and German-speaking worlds in the early twentieth century. This intellectual history is extended to broader cultural and political contexts. Key period is between 1910 and 1968, when modernity's key

aspirations and tensions became explicit. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with HUMN 5550 and SSCI 5550. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5600 - Philosophy of Religion**

Nature of religion and methods of studying it. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with HUMN 5600, PHIL 4600, RLST 4060, 5060, and SSCI 5600. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5650 - Reflections on Modernity**

Explores modernity as a historical epoch and a theoretical space, looking at the commentaries and reflections of influential 20th century thinkers including Adorno, Arendt, Levinas, Merleau-Ponty, Habermas and Foucault. Examines how the theoretical inclinations of modernity were influenced by politics, art, literature and culture. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with HUMN 5650 and SSCI 5650. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5655 - Differing Concepts of God**

God, Gods, and Goddesses have been imagined in many different modes, forms, aspects, and guises throughout human history. This course investigates Paleolithic models of God, the Great Goddess of the Neolithic era, the Gods of mythological traditions, Biblical God, the abstract God of the philosophers, the God of the pantheists, the deists, and the God of the mystics. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4650, RLST 4400 and 5400. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5730 - Philosophy and Literature**

Considers the philosophical dimensions of literature. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4730, ENGL 4735 and 5735. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5735 - Rationalism**

Addresses the fundamental questions of truth and reality through natural reason. Topics vary and may include metaphysics and the rise of modern science; women and the enlightenment; historical problems and linguistic analysis. Restriction: Restricted to Graduate and Graduate

Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4735. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5740 - Empiricism**

Considers the nature and importance of experience. Focuses on British Empiricism, but additional themes which vary may include: American pragmatism, logical positivism, scientific empiricism, phenomenology of experience. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4740. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5750 - Introduction to Phenomenology**

Examines the contribution of phenomenology to selected topics in the theory of meaning, philosophy of mind, ontology, and epistemology, through a study of such philosophers as Husserl, Heidegger, Sartre and Merleau-Ponty. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4750. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5755 - Philosophical Psychology**

Explores debates about psyche and body, mind and world, self and others, and consciousness and nature. Examines the philosophical questions related to those debates that arise within theories of perception, affect and cognition offered by influential psychological models. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4755, HUMN 5750 and SSCI 5750. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5770 - Hegel**

A systematic study of the thought of G.W.F. Hegel through his most important and influential works: The Phenomenology of Spirit; The Encyclopedia of Philosophical Sciences; The Science of Logic; Lectures on the Philosophy of History; and his lectures on the history of philosophy, art and religion. Focus of the course varies. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4770. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5780 - Heidegger**

Studies the thought of Martin Heidegger, one of the most important philosophers of the 20th century. Includes texts from both Heidegger's early and later periods, and focuses on his analyses of human subjectivity and being. Prereq: Six credit hours in Western philosophy. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate

students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4780. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5790 - Nietzsche**

A close study of Nietzsche's philosophical writings, with attention to his significance for philosophy in the 20th century and beyond. Cross-listed with PHIL 4790. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5795 - Marx and Marxism**

A close study of the most influential works of Karl Marx and subsequent theorists who provide either an influential interpretation of the works of Marx or contribute to an innovative application or elaboration of the basic tenets of Marxism. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4795. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5800 - Plato**

A careful study of Plato's writings, emphasizing the dialogue form, and discussion of Plato's significance for the history of ethics, political theory, psychology, metaphysics and epistemology. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4800. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5810 - Aristotle**

Examines Aristotle's systematic philosophy and discusses its contributions to logic, epistemology, physics, psychology, metaphysics, ethics and political theory. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4810. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5812 - Special Topics in Philosophy**

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5820 - Hume**

Considers the work of eighteenth century philosopher David Hume. Emphasis on unity of Hume's thought. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4820. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5830 - Kant**

A close study of Immanuel Kant's revolutionary thought, focusing on Kant's ontology, epistemology, and ethical theory, as they are articulated in his Critique of Pure Reason and Critique of Practical Reason. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 3760. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5833 - Existentialism**

Examines one of the most influential movements in recent European thought, beginning with existentialism's 19th century roots, and continuing on to the existentialist philosophers of the 20th century. Figures covered may include Dostoyevsky, Kierkegaard, Nietzsche, Heidegger, Sartre and de Beauvoir. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4833, HUMN 5833 and SSCI 5833. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5840 - Independent Study: PHIL**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **PHIL 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **PHIL 5900 - John Dewey**

John Dewey was one of the most important of the American philosophers and public intellectuals of the twentieth century. Topics may include Dewey's philosophical naturalism, pragmatist epistemology, process metaphysics and philosophies of experience, aesthetics, religion, technology and democracy. Restriction: Restricted to Graduate and Graduate Non-

Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4900. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5920 - Philosophy of Media and Technology**

A philosophical examination of interrelationships between contemporary media, technology, and their impacts upon character of contemporary life and values. Topics may include ethics, epistemology, democracy, advertising, media literacy and criticism. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4920, HUMN 5920, SSCI 5920. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHIL 5933 - Philosophy of Eros**

What does it mean to understand philosophy as an erotic activity? This question will be examined, first by studying Plato's dialogues-such as Lysis, Symposium and Republic-and then by reading texts from Sigmund Freud, Michael Foucault and others. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4933, WGST 4933/5933, SSCI 5933 and HUMN 5933. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Physics**

### **PHYS 1052 - General Astronomy I**

The history of astronomy is studied from early civilizations to the present. The basic motions of the earth, moon, sun, and planets are discussed both qualitatively and quantitatively, using elementary principles of physics. Properties of our solar system are discussed in detail, including results from unmanned space probes. Note: An additional 30 hours of laboratory work (at times to be arranged), plus appropriate report preparation time, are required to complete laboratory component of the course. Note: High school algebra or equivalent are strongly recommended preparation for this course. Term offered: spring, fall. Max hours: 4 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC1 **Semester Hours:** 4 to 4

### **PHYS 1100 - Foundations of Physics**

One-semester non-lab survey course especially designed for non-science majors. Acquaints students with some of the major principles and methods of physics. Includes applications of physics to everyday life and some discussion of the historical development of physics. Note: this course assumes that students have a good working knowledge of elementary algebra. Term offered: spring, summer, fall. Max Hours: 4 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC2 **Semester Hours:** 4 to 4

## **PHYS 2010 - College Physics I**

This is an algebra based physics course covering mechanics, heat and sound. Note: College algebra and trigonometry are strongly recommended preparation for optimal student success. Term offered: spring, summer, fall. Max Hours: 4 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC2. **Semester Hours:** 4 to 4

## **PHYS 2020 - College Physics II**

This is an algebra based physics course covering electricity, magnetism, light and modern physics. Prerequisite: PHYS 2010 or PHYS 2311 with a C- or higher. Term offered: spring, summer, fall. Max Hours: 4 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC2. **Semester Hours:** 4 to 4

## **PHYS 2030 - College Physics Lab I**

This is an algebra-based physics lab covering subjects studied in PHYS 2010. Term offered: spring, summer, fall. Max Hours: 1 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC1. **Semester Hours:** 1 to 1

## **PHYS 2040 - College Physics Lab II**

This is an algebra-based physics lab covering subjects studied in PHYS 2020. Prerequisite: PHYS 2030 or PHYS 2321 with a C- or higher. Term offered: spring, summer, fall. Max Hours: 1 Credit. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC1. **Semester Hours:** 1 to 1

## **PHYS 2311 - General Physics I: Calculus-Based**

This is a calculus based physics course covering vector displacement, uniform and accelerated motion, force, momentum, energy, rotating systems, oscillations, and an introduction to thermodynamics. Emphasis is on basic principles. Prerequisite: MATH 1401 with a C- or higher. Term offered: spring, summer, fall. Max Hours: 4 Credits. **Semester Hours:** 4 to 4

## **PHYS 2321 - General Physics Lab I**

This is a calculus-based physics lab covering subjects studied in PHYS 2311. Term offered: spring, summer, fall. Max Hours: 1 Credit. **Semester Hours:** 1 to 1

## **PHYS 2331 - General Physics II: Calculus-Based**



This is a calculus based physics course covering electrostatics, magnetic fields, electromagnetic waves (including light), and optics. Prerequisite: PHYS 2311 and MATH 2411 with a C- or higher. Term offered: spring, summer, fall. Max Hours: 4 Credits. **Semester Hours:** 4 to 4

### **PHYS 2341 - General Physics Lab II**

This is a calculus-based physics lab covering subjects studied in PHYS 2331. Prerequisite: PHYS 2030, PHYS 2321 or PHYS 2351 with a C- or higher. Term offered: spring, summer, fall. Max Hours: 1 Credit. **Semester Hours:** 1 to 1

### **PHYS 2351 - Applied Physics Lab I**

Introduces physics majors to several ways that fundamental concepts in mechanics intersect with useful technologies, resulting in documented technical competencies useful in research and industry. Co-req: PHYS 2311. Restriction: Restricted to PHYS majors, minors, or instructor's permission. Term offered: spring, fall. Max Hours: 1 Credit. **Semester Hours:** 1 to 1

### **PHYS 2361 - Applied Physics Lab II**

Introduces physics majors to several ways that fundamental concepts in electrodynamics and optics intersect with useful technologies, resulting in documented technical competencies useful in research and industry. Prereq: PHYS 2351. Co-req: PHYS 2331. Restriction: Restricted to PHYS majors, minors, or instructor's permission. Term offered: spring, fall. Max Hours: 1 Credit. **Semester Hours:** 1 to 1

### **PHYS 2711 - Vibrations and Waves**

Introduces vibrations and waves associated with physical phenomena. Analytic and numerical methods in physical contexts. Topics include harmonic oscillators, resonance, coupled oscillators, nonlinear oscillators, waves in elastic media, sound waves, pulses and dispersion. Prerequisite: PHYS 2331 and MATH 2411 with a C- or higher. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 2811 - Modern Physics I**

Presents a study of the events and discoveries that occurred during the latter part of the 19th and the first part of the 20th centuries which led to the discovery of quantum mechanics; namely, special relativity, particle nature of radiation, wave properties of particles, models of the atom, and the introduction of quantum mechanics. Prereq: PHYS 2331 and MATH 2411 with a C- or higher. Term offered: spring, fall. Max Hours: 4 Credits. **Semester Hours:** 4 to 4

### **PHYS 2840 - Independent Study: PHYS**

Students must check with a faculty member before taking this course. Repeatable. Term offered: spring, summer, fall infrequently. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **PHYS 2939 - Internship**

Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Note: students must work with the Experiential Learning Center advising to complete a course contract and gain approval. Prereq: 15 hours of 2.75 GPA. Repeatable. Term offered: spring, summer, fall infrequently. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **PHYS 3011 - Modern Physics II**

Quantum physics used for an understanding of energy levels and configuration of hydrogen atoms, strength of molecular bonds, atomic and molecular spectroscopy, solid state physics, band theory, nuclear and subatomic physics. Also includes quantum statistics, general relativity and cosmology. Note: Students will not earn credit for this course if they have already earned credit for PHYS 2821. Prereq: PHYS 2811 with a C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 3050 - General Astronomy II**

Evolution of our sun and other stars is studied, as well as the methods used to gain the information. Discussion includes objects such as neutron stars, novae and supernovae, and black holes. Large-scale structures, including clusters and galaxies, are studied. Prereq: PHYS 1052 or PHYS 2010 or PHYS 2311. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 3070 - Physical Cosmology**

Designed for science and engineering maj, stud. in quantitative fields/ w req math skills interested in physical universe. Covers large-scale structure of universe & its evolution from birth well into future. Gravitational concepts, neutron stars, black holes, big bang univ, cosmological tests, dark matter & energy. Problem solving emphasized. Prereq: PHYS 1052 or PHYS 2010 or PHYS 2311 or permission. Note: This course assumes that students have completed PHYS 2010 or PHYS 2311 prior to taking this course. Note: Routine knowledge of algebra, geometry and trigonometry is assumed. Knowledge of trig and calculus also useful. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 3082 - Energy and the Environment**

For students of various backgrounds who wish to increase their understanding of the environmental and technical issues of supplying the energy demands of our society. Alternative energy sources and conservation are explored as solutions to promote sustainable society.

Note: One college-level science course and MATH 1110 or equivalent are strongly recommended as preparation for optimal student success. Cross-listed with ENVS 3082. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 3120 - Methods of Mathematical Physics**

Typically covers calculus of variations, special functions, partial differential equations, integral transforms, linear vector spaces, and tensor analysis. Pre: MATH 2421 and either MATH 3195 or MATH 3191 and MATH 3200 with a C-or higher. Term offered: fall. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

### **PHYS 3151 - Biophysics Outlook I**

Designed as a companion to General Biology I (but can take stand-alone), this course explores how biophysics concepts and experimental methods add to the knowledge of life's processes at the molecular and cellular level. Note: PHYS 2010 and 2020 strongly recommended for optimal student success. Term offered: fall. Max Hours: 1 Credit. **Semester Hours:** 1 to 1

### **PHYS 3161 - Biophysics Outlook II**

Designed as a companion to General Biology I (but can take stand-alone), this course explores how biophysics concepts and experimental methods contribute to the understanding of the structure and function of plants, animals & ecological systems. Note: PHYS 2010 and PHYS 2020 strongly recommended for optimal student success. Term offered: spring. Max Hours: 1 Credit.

**Semester Hours:** 1 to 1

### **PHYS 3211 - Analytical Mechanics**

Topics include the Lagrange and Hamiltonian formulations, the two-body problem, rigid body motion, and small oscillations. Pre-req: PHYS 2711, MATH 2421 and either MATH 3195 or MATH 3191 and MATH 3200 with a C-or higher. Co-req PHYS 3120. Term offered: fall. Max Hours: 4 Credits. **Semester Hours:** 4 to 4

### **PHYS 3411 - Thermal Physics**

Covers the basic concepts of the three related disciplines of thermodynamics, statistical mechanics, and kinetic theory. Prereq: PHYS 2331, PHYS 2811 and MATH 2421 with a C- or higher; Prereq or Coreq: MATH 3195 or MATH 3191 and MATH 3200 with a C- or higher if completed prior to PHYS 3411. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 3620 - Sound and Music**

Considers the basic nature of sound waves, the ear and hearing, and musical instruments. Although this course is mainly descriptive, some high school algebra will be used. Term offered: spring, fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 3711 - Junior Laboratory I**

Advanced laboratory in classical and modern physics. Prereq: PHYS 2811 with a C- or higher. Term offered: spring, fall. Max Hours: 2 Credits. **Semester Hours:** 2 to 2

### **PHYS 3721 - Junior Laboratory II**

Advanced laboratory in classical and modern physics. Prereq: PHYS 3711 with a C- or higher. Term offered: spring, fall. Max Hours: 2 Credits. **Semester Hours:** 2 to 2

### **PHYS 3811 - Quantum Mechanics**

A course in which both wave and matrix mechanics are developed and applied to selected problems in atomic physics. Prereq: PHYS 2811 and 3211 with a C- or higher. Term offered: spring. Max Hours: 4 Credits. **Semester Hours:** 4 to 4

### **PHYS 3840 - Independent Study: PHYS**

Note: Students must check with a faculty member before taking this course. Repeatable. Term offered: spring, summer, fall infrequently. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **PHYS 3939 - Internship**

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Note: students must work with the Experiential Learning Center advising to complete a course contract and gain approval. Prereq: Junior standing or higher and at least a 2.75 cumulative GPA. Repeatable. Term offered: spring, summer, fall infrequently. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **PHYS 4251 - Physical Fluid Dynamics**

Fundamental concepts and methods in fluid dynamics are developed through basic laws, the Navier-Stokes equation, viscous fluid flow, dimensional analysis, vorticity, boundary layers, linear stability and turbulent flow. Cross-listed with PHYS 5251. Prereq: Restricted to students who have completed PHYS 2311, PHYS 2331 and PHYS 3120 with a C- or higher or with instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 4331 - Principles of Electricity and Magnetism**

Elements of mathematical theory of electricity and magnetism, including electrostatics, magnetostatics, polarized media, direct and alternating current theory, and introduction to electromagnetic fields and waves. Prereq: PHYS 2331 and 3120 with a C- or higher. Term offered: fall. Max Hours: 4 Credits. **Semester Hours:** 4 to 4

### **PHYS 4351 - Bioelectromagnetism**

The fundamental theory of electric and magnetic fields is developed and applied to problems of biology and medicine. Examples in medical diagnostics and treatment are built upon rigorous application of Maxwell's equations and constitutive models of electromagnetic properties of biomaterials. Prereq: PHYS 2331 and 3120 or permission of instructor. Cross-listed with PHYS 5351. Term offered: spring infrequently. Max Hours: 4 Credits. **Semester Hours:** 4 to 4

### **PHYS 4440 - Electricity and Magnetism II**

This course is a continuation of material presented in Electricity and Magnetism (PHYS 4331) and concentrates on electromagnetic radiation. Topics include the propagation of electromagnetic waves, interference and refraction, wave guides, the emission of electromagnetic radiation from antennas, and electromagnetic fields due to accelerating point charges. An introduction to relativistic electromagnetism is also included. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 4510 - Optics**

Presents a contemporary treatment of selected topics in optics, such as matrix methods in geometrical optics, the Fourier analysis approach to physical optics, and interaction of light with matter. Prereq: PHYS 2331, 2811 and 3120 with a C- or higher. Term offered: spring odd years. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 4550 - Astrophysics**

Covers stellar astrophysics, solar physics, star formations, stellar evolution, processes in the interstellar medium, galactic dynamics and evolution, formation of galaxies and cosmology. Note: MATH 3195; PHYS 2821 and 3050 are strongly recommended preparation for optimal student success. Term offered: spring odd years. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 4611 - Computational Physics**

Designed to provide an understanding of the role of the computer in modern theoretical physics by studying the simulation of physical phenomena in various fields of physics. Prerequisite: PHYS 3120. Note: Students will not earn credit for PHYS 4611, if they have already earned credit for PHYS 4610. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 4650 - Solid State Physics**

Covers the basic thermal and electrical properties of solids which are explained in terms of the Brillouin zone structures of phonons and electrons. Prereq: PHYS 3411 and PHYS 3811 with a C- or higher. Term offered: fall odd years. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 4711 - Senior Laboratory I**

Individual project laboratory with emphasis on modern methods of physical experimentation. Prereq: PHYS 3721 with a C- or higher. Term offered: spring, fall. Max Hours: 2 Credits. **Semester Hours:** 2 to 2

### **PHYS 4721 - Senior Laboratory II**

Individual project laboratory with emphasis on modern methods of physical experimentation. Prereq: PHYS 4711 with a C- or higher. Term offered: spring, fall. Max Hours: 2 Credits. **Semester Hours:** 2 to 2

### **PHYS 4810 - Atomic and Molecular Structure**

A course in which quantum mechanical methods are applied to problems in atomic and molecular physics, such as the one-electron atom, atomic and molecular spectra, and particle scattering. Prereq: PHYS 3811 with a C- or higher. Term offered: fall even years. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 4820 - Subatomic Physics**

Introductory treatment of the various concepts and models used to describe nuclear and high energy particle phenomena. Prereq: PHYS 2811 with a C- or higher. Term offered: spring even years. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 4840 - Independent Study: PHYS**

Note: Students must check with a faculty member before taking this course. Repeatable. Term offered: spring, summer, fall infrequently. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **PHYS 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Term offered: spring, summer, fall. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **PHYS 4939 - Internship**

Note: students must work with the Experiential Learning Center advising to complete a course contract and gain approval. Repeatable. Term offered: spring, summer, fall infrequently. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **PHYS 4950 - General Relativity**

This course will introduce classical general relativity, a generalized theory of gravity that reduces to Newtonian gravity in the weak gravity limit. This course covers the basic principles of Einstein's general theory of relativity, differential geometry, experimental tests of general relativity, black holes, and cosmology. Since this course will emphasize both analytic calculation and physical understanding of classical gravity and is a 3 credit hour senior-level physics course, it can be very challenging, especially if taken with other physics courses. A good rule of thumb for a college course of this type is to expect to spend a minimum of 2 to 4 times the amount of time outside of class as you do in class. For this course, that means a minimum of 6 to 12 hours per week outside of class. Term offered: infrequent. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 4980 - Advanced Physics Topics**

Covers a particular topic, as announced in the 'Schedule Planner.' Note: May be taken more than once for credit in different topics. Prereq: PHYS 2811 with a C- or higher. Repeatable. Term offered: spring, fall. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **PHYS 5101 - XP Forces and Motion**

Concepts of motion, forces, momentum, and mechanical energy are connected to major technologies. A key goal is to exhibit how an experienced practitioner from a field other than physics assimilates these concepts into applications in daily life and the workplace. Prereq: permission of instructor required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 5102 - XP Electromagnetism and Energy**

Concepts such as charge, current, electric field, potential, and magnetic field are developed with focus on energy and power generation. A key goal is to exhibit how an experienced practitioner from a field other than physics assimilates these concepts into applications in daily life and the workplace. Prereq: Permission of instructor required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 5103 - XP Light, Color and Optics**

The physical nature of light explains optical technologies using illumination, shadows, reflection, refraction, color, polarization and interference. A key goal is to exhibit how an experienced practitioner from a field other than physics assimilates these concepts into

applications in daily life and the workplace. Prereq: Permission of instructor required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PHYS 5104 - RM-MSMSP Aviation Fundamentals**

Designed for teachers in the RM-MSMSP program Explores flight instruments, aerodynamics, safety of flight, charts/airspace, radios/communication, weather, navigation, aircraft performance, NASA microgravity and medical issues, cross country flight, route and aircraft planning, Crew resource management, aeronautical decision making and more. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **PHYS 5105 - RM-MSMSP Research Experience for Teachers - Physics Cohort**

A five - week research exploration in which RM-MSMSP teachers will raise their level of relevant scientific understanding by engaging in a "hands-on" workshop, transforming what they have learned into new curricular materials that will improve the scientific abilities of their students and hopefully stimulate them to consider a STEM career. Note: credit may not apply toward any CLAS degree. Max hours: 6 Credits. **Semester Hours:** 1 to 6

### **PHYS 5351 - Bioelectromagnetism**

The fundamental theory of electric and magnetic fields is developed and applied to problems in biology and medicine. Examples in medical diagnostics and treatment are built upon rigorous application of Maxwell's equations and constitutive models of electromagnetic properties of biomaterials. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with PHYS 4351. Term offered: infrequent. Max Hours: 4 Credits. **Semester Hours:** 4 to 4

### **PHYS 5352 - Bioelectromagnetism NM**

This course is the non-majors' companion to PHYS 4351/5351 (taught simultaneously) using modeling approaches accessible to the general science student. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with PHYS 4352. Term offered: infrequent. Max Hours: 4 Credits. **Semester Hours:** 4 to 4

### **PHYS 5400 - Scientific Instrumentation**

Conceptual and practical knowledge needed to design scientific instruments, develop technical products, and use special laboratory procedures to research. Topics include materials, mechanisms, electronics, and optics. Cross-listed with PHYS 4400. Repeatable. Term offered: infrequent. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **PHYS 5401 - Special Topics**

Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3



## **PHYS 5840 - Independent Study: PHYS**

Note: Students must check with a faculty member before taking this course. Repeatable. Term offered: spring, summer, fall infrequently. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

## **PHYS 5850 - Physics for Design and Innovation I**

A service-learning project using fundamental physical principles to design a prototype scientific instrument, technical device, or technical process for a real-world client. Includes instruction on project management, intellectual property, and market analysis. Cross-listed with PHYS 4850. Repeatable. Term offered: infrequent. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

## **PHYS 5852 - Physics for Design and Innovation II**

A capstone project using fundamental physical principles to prototype a scientific instrument, technical device or technical process. The focus is on the student's own product idea. Includes online guided readings on the wider context of product development. Students should consult with instructor on necessary physics and mathematics preparation for the project. Prereq: PHYS 4850 or 5850. Cross-listed with PHYS 5852. Repeatable. Term offered: infrequent. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

## **PHYS 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **PHYS 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Note: Students must check with a faculty member before taking this course. Repeatable. Term offered: spring, summer, fall infrequently. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

## **PHYS 5950 - Master's Thesis**

Note: Students must check with a faculty member before taking this course. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

## **PHYS 5960 - Master's Project**

Note: Students must check with a faculty member before taking this course. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

## **PHYS 5980 - Advanced Physics Topics**

Covers a particular topic as announced in the 'Schedule Planner.' Note: May be taken more than once for credit in different topics. Note: this course assumes that students have completed PHYS 2811 or equivalent. Prereq: Graduate standing. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

## **PHYS 6840 - Independent Study: PHYS**

Note: Students must check with a faculty member before taking this course. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

## **Political Science**

### **PSCI 1001 - Introduction to Political Science: The Quest for Freedom and Justice**

Introduces the study of politics, its human importance, and its relationship to social institutions. Analysis of the relationship between individual political behavior and characteristics of the political system. Development of key concepts such as power, legitimacy, authority, political socialization, and revolution. Note: Required of all PSCI majors. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS1 **Semester Hours:** 3 to 3

### **PSCI 1111 - First Year Seminar**

Restriction: Restricted to Freshman level students. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **PSCI 2001 - Topics in Political Science**

Covers different areas of politics. Note: May be taken more than once for credit when topics vary. Repeatable. Max hours: 9 Credits. **Semester Hours:** 1 to 3

### **PSCI 2006 - Global Political Issues**

Studies global political issues, exploring the broad forces at play in the world: international economics, national interests, military power, nationalism, ethnicity, the environment and human rights. Discussion of world events and underlying global issues, incorporating analytical tools used by political scientists. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 2011 - Logic of Political Inquiry**

This course builds critical thinking techniques, logical habits of mind, and research skills necessary for political study. Includes argumentation basics, logical fallacies, evaluating

evidence, understanding statistics, effective writing, and internet research. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 2365 - Politics of Climate Change**

This course shows how Political Science addresses today's most severe threat to our planet. It analyzes how societies try to mitigate and adapt to climate change at various governance levels. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 2410 - Political Science through Science Fiction**

Explore political science concepts by analyzing works of science fiction. Course examines utopian and dystopian communities, imagined futures, and political theorizing in both classic and unusual works of fiction. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 2840 - Independent Study**

An opportunity for lower division students who demonstrate academic potential to pursue the study of some subject of interest in greater detail, with supervision from a faculty member in the department. Subjects chosen and arrangements for assignments to be made between student and faculty. Prereq: One semester of course work at Downtown Denver Campus. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **PSCI 3000 - Topics: Conference Participation**

Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PSCI 3002 - Topics in Political Science**

Covers different areas of politics. Note: May be taken more than once for credit when topics vary. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **PSCI 3022 - Political Systems of the World**

The class focuses on the analyses of various political systems around the world. Students will look at democracies and dictatorships, industrialized countries and developing countries. Though a structured comparison, students will assess and test key theories in Political Science. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 3034 - Race, Gender, Law and Public Policy**

Historical overview of race and gender relations in the U.S. and an examination of the treatment of issues of race and gender in the judicial system and public policy. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 3035 - Political Movements: Race and Gender**

Examines the emergence, growth, and decline of social movements for race and gender equality. Discussion of political issues of race and gender in the 1990s. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 3042 - Introduction to International Relations**

Basic background and theories of international relations with focus on the interaction between nation states, international organizations, regimes and transnational movements. Themes examined include foreign policy conduct, international security and political economy, human rights and environmental management. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 3050 - Islamophobia**

Islamophobia depicts Islam and its followers as threats to civilization, human rights and progress. Course examines historical and current Islamophobia, including impacts on international relations and on domestic politics. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 3064 - Power and Empowerment in the United States**

Introduces U.S. political economy. Analysis of the political and economic forces and structures that shape the opportunities available to the American people. Among topics included are reciprocal impacts of government and business, the federal budget, taxation, lobbying and special interests, community organizing, and elections. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 3214 - Federal Law and American Indians**

Examines the legal and political history of the U.S. in relation to American Indian Nations. Focuses on specific laws and Supreme Court cases in federal Indian law, with analysis of U.S. policy. There will be some comparison with Indian policies of other countries. Cross-listed with ETST 3216. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 3347 - Film and Politics**

Presents historical and contemporary films to introduce students to critical evaluation of film as a political medium. Whether designed as propaganda or entertainment, films shape and reflect critical issues in our political and social culture. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 3840 - Independent Study: PSCI**

Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **PSCI 3914 - The Urban Citizen**

Course emphasis is community, the individual, and the good life. Experiential learning and classroom discussions about capacities of urban citizens. Focus is on social, political, and economic resources that individuals command, issues of equality and inequality, and possibilities of constructive change. Prereq: A willingness to spend a semester working and studying together as a team in both the classroom and the community. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 3939 - Internship**

Designed experiences involving application of political concepts and skills in supervised employment situations. Note: students must work with the Experiential Learning Center advising to complete a course contract and gain approval. Prereq: Junior standing or higher. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 9

### **PSCI 4002 - Topics in Political Science**

Specialized areas of politics. Note: May be taken more than once for credit when topics vary. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 3

### **PSCI 4011 - GIS in Political Science**

Computer lab course developing methodological skills in Geographic Information Systems (GIS) in political contexts. Geospatial computerized mapping skills are important in political fields such as urban planning, electoral analysis, environmental justice, demographics, public health, and criminal justice. Designed for beginners. Cross-listed with PSCI 5011. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4014 - Media and Politics**

Explores the impact of the news media on the American political system, including public policy and citizen participation, and addresses trends in news coverage and media ownership, and their impact on public opinion. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4024 - State Politics: Focus Colorado**

Examination of American state politics, with an emphasis on Colorado. Course examines the special role of state governments in the American federal system. Focus on dominant current issues facing Colorado state government. Term offered: fall, summer. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **PSCI 4025 - Local Governance and Globalization**

Introduces international political economy, consequences of globalization for localities, interplay between wealth and power among nations, multinational corporations, NGOs and the UN, and impact of their actions on local governments. Topics include development, aid, trade, outsourcing, eco-sustainability and global equity. Cross-listed with PSCI 5025. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4034 - Political Parties and Pressure Groups**

Democrats, Republicans, third parties, and pressure groups in the United States. Analysis of pressure politics and political behavior. Impact of parties and pressure groups on the public good. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4044 - The Presidency**

An overview of the historical, constitutional, and functional aspects of the presidency. Focuses on the powers and vulnerabilities of the presidency and on the style and politics of the current president. Cross-listed with PSCI 5044. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4074 - Urban Politics**

The crisis and the promise of U.S. cities. Nature and roots of critical urban problems. Citizen involvement in urban decision making. Government as problem and as solution. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4075 - Gentrification and Social Equity**

Study causes and consequences of urban gentrification, and explore strategies of grassroots resistance and social equity solutions that are being mobilized to challenge the forces of gentrification. Contrast common celebrations of the waves of capital reinvestment that are fueling urban revitalization with the frequent claim of many low-income neighborhoods: "Gentrification is Class War!" Cross-listed with PSCI 5075. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4084 - Local Government and Administration**

Policy and administrative challenges faced by local government in the 21st century. Emphasis on cities under federalism, alternative forms of city governance, and new challenges from increasingly diverse constituents. Issues of poverty, public safety, health, transportation, environment, corruption, and accountability. Cross-listed with PSCI 5084. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4085 - Comparative Governance: Environment and Society**

Focuses on how public & private actors at various levels of governance address pressing social & environmental issues such as aging societies, drug abuse, air pollution & global warming. Students will learn to analyze the dynamics of conflict & cooperation, using main concepts and theories of governance literature. Cross-list PSCI 5085. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4094 - Seminar: American Politics**

Foundations of U.S. politics and contemporary political issues. Federal/state/community relations. Relationship among the three branches of the Federal government. Colorado controversies arising under the U.S. Constitution. Cross-listed with PSCI 5014. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4105 - Comparative Politics: Europe**

An intensive and comparative analysis of the political systems and processes of Europe. Emphasis on political culture and economy; executive-legislative relationships; electoral systems; political parties and interest groups; political conflict and citizen participation; and the impact of social changes on political institutions. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Cross-listed with PSCI 5105. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4115 - Third World Politics**

Examines the factors challenging political stability in low income nations and the prospects for democracy and economic development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4124 - Denver Politics**

Surveys Denver's dominant political and economic forces and community agendas that compete with the downtown growth machine. Examines urban renewal strategies, gentrification and grass-roots resistance, and the role of officials in shaping Denver's distribution of wealth and life-opportunities. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4126 - Introduction to International Political Economy**

A short introduction to international economy, including classic readings of international political economy (such as Smith, Ricardo, Marx, Lenin), and more recent work on globalization, applying related theories to the current world economy. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **PSCI 4144 - Indigenous Political Systems**

Surveys political theory and practice in indigenous societies in the Americas. Examines the impact of indigenous political thought on Euro-American politics, especially the U.S. Constitution, and explores the contemporary impact of indigenous people on current politics. Cross-listed with ETST 4144. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4146 - Indigenous Politics**

Surveys the status of the world's native peoples and nations, and the role of law and politics in the future of indigenous peoples in the global arena. Examines questions of human rights, economic development, and international law and politics. Cross-listed with PSCI 5145 and ETST 4146. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4150 - Gender Politics in the Middle East: Beyond Orientalism & Islamism**

This course is about Middle Eastern women's subjectivity and various forms of agency. It explores the nexus of domestic, regional and international forces that shapes the lives of Middle Eastern women, in particular in the Algerian, Egyptian, Iranian, Israeli and Palestinian contexts. Far from being silent observers of the contests among these forces, as is often assumed, Middle Eastern women have been active actors in the public arena since the 19th century colonial encounter and the importation of the modern state to the region using an array of means to make their voices heard. Theirs were often more militant than those of their countrymen. The course is divided into two parts. The first part provides an overview of the theoretical notions discussed such as Orientalism, agency, colonialism and post-colonialism. Related to this theoretical section is a historical overview that is necessary to the understanding of the contemporary conditions of Middle Eastern women and the continuities and changes between past and present. The second part covers pressing topics in the lives of Middle Eastern women in the post-independence era such as the rise of Political Islam, the global trend of democratization, war and occupation. The emphasis in this section is on women as active participants in the debates surrounding these issues, rather than as objects of them. The readings assigned include both texts written by scholars from the region and by others from without. They provide analyses of the contexts within which Middle Eastern women's struggles take place. In addition, students will be exposed to materials produced by Middle Eastern women activists that express their own opinions and views in order to avoid misrepresentation and to reflect the diversity among them. Cross-listed with WGST 4150. Max hours: 3 Credits. **Semester Hours:** 3 to 3



### **PSCI 4155 - Political Systems of the Middle East and North Africa**

Comparative analysis of political processes in the Middle East and North Africa. Islamic political theory and its contemporary manifestations. The role of nationalism and the quest for modernity in the political development of this region. Parties and programmed modernization in transitional politics. Violent and nonviolent change. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4156 - The Arab-Israeli Peace Process**

Critical analysis of Arab and Israeli perspectives on the on-going peace negotiations in the Middle East. Historical background and religious-cultural aspects of current problems. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Cross-listed with ETST 4156. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4165 - Islamic Politics and Culture**

Comprehensive, in-depth study of Islam and Muslims. Islam is viewed as a "way of life" with social, economic, psychological, spiritual, and political implications. Among topics to be examined are: women in Islam, Jihad, fundamentalism, Islamic movements, Islam and the West. Cross-listed with RLST 3100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4185 - Corruption in the U.S. and Abroad**

Explores the causes and consequences of administrative and political corruption in developed and developing countries, and evaluates various anti-corruption strategies. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4186 - East Asia in World Affairs**

Political and economic systems and foreign policies of East Asian powers, such as China, Japan, Taiwan, South Korea and Hong Kong; interactions of these powers and their collective economic and political roles in world affairs; major theoretical approaches to the study of East Asian powers. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4206 - Social Movements, Democracy and Global Politics**

Examines global social movements as new political actors within world politics; how theoretical perspectives in international relations and democracy address these actors; and the forms of interaction among these actors, states, and global governance institutions. Cross-listed with PSCI 5206. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4207 - Theories of Social and Political Change**

Investigation of social and political power with respect to possibilities of change. Location of present barriers to change within ongoing histories of marginalization, exclusion, and violence. Critical examination of political inclusion and recognition. Imaginations and pursuits of just, equitable, and/or Utopian worlds. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4215 - Women's Rights, Human Rights: Global Perspectives**

Explores the global feminist movement's campaign to "engender" human rights. Examination of women's human-rights issues and the critique of this campaign as representing cultural imperialism. Note: this course assumes that students have completed at least two political science courses. Cross-listed with WGST 4215. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4216 - International Politics: Human Rights**

The system of nation states, concepts of national interest, goals of foreign policies, conduct of diplomacy, and the bearing of these elements on the problem of human rights. Presentation and evaluation of the solutions that have been offered for the securing of justice and the maintenance of peace. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4224 - Dictatorships in 21st Century**

Analyzes and classifies political systems of non-democratic regimes. Reviews earlier and contemporary theories that explain the origins, survival and death of authoritarian regimes. Discusses the impact of dictatorial rule on domestic developments as well as on international relations. Cross-listed with PSCI 5224. PSCI 3022 recommended for student success. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4225 - Democracy and Democratization**

Examines the conditions under which countries turn from authoritarianism towards democracy and become stable democratic regimes. Also examines the impact of foreign and international factors on new democracies. Cross-listed with PSCI 5225. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4226 - The United Nations in World Affairs**

Current operation and future potential of the United Nations as a complex actor in world affairs, both expressing conflicting interests of its participants and promoting universal goals, including world peace, human rights, and environmental protection. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4236 - American Foreign Policy**

Examines the postwar events, controversies, and most recent challenges in U.S. foreign policy. Analyses of the major sources of U.S. foreign policy, such as ideology, national interests, and national power. Attention to the pattern and process of foreign policy-making. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4237 - American National Security**

Examines American national security, utilizing an interdisciplinary analysis of its domestic historical development and its function in the current global context. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4240 - International Security**

Examines old and emerging "threats" to national security, and policy responses, from theoretical, historical and geographical perspectives. Explores challenges of ethnic conflict, weapons of mass destruction, environmental and economic security. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4248 - Gender, Globalization and Development**

Analyzes the effects of globalization on the gendered processes of international development and strategies to empower women to achieve gender justice across race, class and national divisions. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Cross-listed with PSCI 5245 and WGST 4248/5248. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4265 - Social Justice And Globalization**

Examines issues of justice and ethical responsibility in a globalizing world. Do moral obligations of individuals and institutions end at national borders or do they encompass all human beings and extend to the environment and to future generations? Cross-listed with PSCI 5265. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4266 - International Law**

Investigates the body of law that regulates relations between nations and provides a framework for solving common problems and disputes between nations. Note: this course is intended for political science majors. Cross-listed with PSCI 5266. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4276 - Conflicts and Rights in International Law**

Explores contending interpretations and practices in international law regarding issues such as the legitimacy of humanitarian intervention, efficacy of truth commissions, tensions between truth and justice in cases of genocide and war crimes, and legal changes needed to devise viable rules. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Cross-listed with PSCI 5276. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **PSCI 4280 - The Politics of War Law**

Examines international laws governing armed conflict, including human rights law. Investigates the reasons for instances of compliance and violation within this international legal regime regulating war and conflict. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4286 - International Relations: War or Peace?**

Presents alternative theoretical frameworks for the explanation of war and peace. Investigations of the efficacy of international law, just-war norms and the UN in preventing or containing conflict. Cross-listed with PSCI 5286. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4326 - Advanced International Political Economy: Globalization**

Engages the current debate about globalization. Conceptualizes globalization and evaluates the pros and cons of global trade and finance for developed and developing countries. Develops a model for a sustainable and just global economy. Prereq: PSCI 4126. Cross-listed with PSCI 5326. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **PSCI 4330 - U.S. Health Policy**

The role of public health policy as legislated at the federal and state levels. Individual health policy (e.g. social security and managed care) and public health policy (e.g. mandatory immunizations, HIV testing, air and water quality). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4354 - Environmental Politics**

Political, legal, and economic forces in environmental law and policy. Special emphasis on air and water pollution and on threats to public and agricultural land. Environmental groups and their opponents. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4365 - Global Ecological Crises**

Overview of global ecological problems such as climate change, transboundary pollutions, and loss of bio-diversity in an attempt to understand the political, economic, and cultural forces

behind these problems and the status of legal and policy initiatives to address them. Cross-listed with PSCI 5365. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4407 - Early Political Thought**

Main currents of political thought in their historical setting from Plato to Machiavelli, with a critical evaluation of those elements of continuing worth. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4414 - Non-Profits and Social Change**

Explores role of non-profits in catalyzing social change. What are obstacles and opportunities to leveraging social change through nonprofits? What factors shape non-profits to be either transformational or systemstabilizing forces? Cross-listed with PSCI 5514. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4417 - Modern Political Thought**

Theories of modernity and its lasting social and political consequences. Topics may include liberalism and neoliberalism, capitalism and Marxism, humanism and posthumanism, racial slavery, colonialism, and ecology. PSCI 4407 is not a prerequisite for PSCI 4417. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4427 - Law, Politics and Justice**

Analysis of the relationship of politics, law, and justice, particularly the degree to which moral norms and political concerns should and do influence legal standards and their perceived legitimacy. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4444 - Contemporary Culture and Politics in America**

Intellectual and experiential investigation of the interplay of culture and politics in American society, as manifested in literature, social and political philosophy, psychological writings and trends, radical movements, popular culture, and daily behavior. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4446 - Advanced Indigenous Peoples' Politics**

Builds upon the theoretical and applied foundations of PSCI 4146. Intensive study of international legal and political developments are examined, particularly in the United Nations

and the Organization of American States systems. Prereq: PSCI 4144 or PSCI 4146. Cross-listed with PSCI 5446. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4457 - American Political Thought**

Critical examination of American political life at the intersections of social categories such as race, class, gender, sexuality, disability, and Indigeneity. Exploration of key and marginal thinkers through a variety of texts and genres. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4477 - Constitutional Law I**

Nature and scope of the following American constitutional principles as developed by the U.S. Supreme Court: federalism, jurisdiction of the federal courts, separation of powers, the taxing power, and the commerce power. Case method. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4487 - Constitutional Law II**

Continuation of PSCI 4477, with emphasis on the war powers of the president, citizenship, the Bill of Rights, and the Civil War amendments. (Case method.) Note: PSCI 4477 is not a prerequisite for PSCI 4487. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4494 - Judicial Politics**

Examines principal actors in the legal system: police, lawyers, judges, citizens. About half of this course is devoted to the study of judicial behavior, especially at the Supreme Court level. Political and personal influences on judicial behavior. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4505 - Political System of Russia and Its Neighbors**

The class focuses on the political values, institutions and actors of Russia and its neighboring countries, covering the political developments since the late 20th century. The relations between Russia, the European Union and the United States are also analyzed. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4535 - Labor and Working Class Politics**

Explores the status of the labor movement both in the U.S. and internationally, as well as the political, philosophical, and social implications of socioeconomic class status and identity. Cross-listed with PSCI 5535. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4545 - Immigration Politics**

Introduces students to central theories of migration and a survey of immigration law and policy in the 20th century. Highlights experiences of Mexican and Latin American immigrants and related topics, including: U.S.-Mexican foreign relations, bilingual education, undocumented immigration and globalization. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Cross-listed with PSCI 5545. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4555 - International Women's Resistance**

Examines local and international struggles of women to build peace and justice by resisting systems of inequality such as colonialism, racism, patriarchy, globalization, and religious intolerance. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Cross-listed with PSCI 5555, ETST 4555 and WGST 4555/5555. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4564 - Gender and Politics**

Inter-sectional examination of the personal and political life of gender. Exploration of constructions, performances, and creative reconfiguration of gender through a variety of texts, genres, and media. Cross-listed with WGST 4564. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4605 - Politics and Governments of South Asia**

Studies the political systems of Bangladesh, India, Pakistan, Sri Lanka and Nepal. The impact of British rule on the development of political institutions on the subcontinent as well as problems of political development at all levels. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4615 - Politics and Government of China**

Political and governmental changes within China, from the 19th century to the present. Primary emphasis on contemporary political systems and sociopolitical problems. China's struggle for independence and economic development. The Chinese revolutions, Maoist communism, and the post-Maoist period. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4726 - Seminar on U.S. and China Relations**

Detailed examination of historical context and current issues in U.S./China relations. Emphasis on modern period, with particular attention to changing relations in context of rising power of China. Cross-listed with PSCI 5726. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4736 - The Middle East in World Affairs**

Evolution and revolution in the Middle East. The character of nationalism in the area. Analysis of inter-regional and international problems affecting the Middle East, with special emphasis on current Arab-Israeli relations. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4757 - Legal Reasoning and Writing**

Introduces the fundamentals of legal reasoning and legal argumentation through intensive class discussion, formal debate and writing. Attention is given to the relationship between case and statutory law and their application in trial and appeals courts in the United States. Note: this course assumes that students have completed ENGL 1020, 2030, and any 3000-level English/writing course, or COMM 3120. Cross-listed with PSCI 5747, COMM 4750, 5750. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4807 - Political Violence**

Investigates different types of political violence including genocide, ethnic and religious conflict, revolution, terrorism, war, state repression and others. Introduces theories of individual, collective and institutional violence, applies them to a range of case studies and explores possible solutions. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4808 - Strategies of Peacebuilding**

The course investigates the theories and strategies of peacebuilding in societies that have endured intrastate conflict and/or massive human rights violations and asks whether peace and justice and democracy can or should work together and how forgiveness and reconciliation might develop. Cross-listed with PSCI 5808. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4827 - Women and the Law**

Examines the role of the courts in the development of public policy toward women; how the legal system affects the economic power, family roles, safety and political participation of women. Cross-listed with ETST 4827 and WGST 4827. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4837 - Contemporary Issues in Civil Liberties**

Conflicting rights of individuals and groups in several areas of civil liberties, including religious groups, free speech, sexual freedom, racial quotas, and anti-governmental actions and publications. This course includes case law, readings, guest speakers and case discussions. Cross-listed with PSCI 5837. Max hours: 3 Credits. **Semester Hours:** 3 to 3



### **PSCI 4840 - Independent Study: PSCI**

An opportunity for advanced students with good scholastic records, and with appropriate courses completed, to pursue independently the study of some subject of special interest to them. Subjects chosen and arrangements made to suit the needs of each student. Note: Primarily for seniors. Prereq: 15 semester hours in political science and permission of instructor. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **PSCI 4878 - War, Film, and International Law**

This course examines interactions of culture, politics, and law by chronologically investigating 20th-century war movies and the ways experiences and norms have shaped and been shaped by cinematic representations. Cross-listed with PSCI 5878. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **PSCI 4914 - Community Organizing and Community Development**

The theory and practice of community organizing strategies and community development innovations. How can social activists build power at the grassroots to build equitable, sustainable, and healthy communities? Cross-listed with PSCI 5914. Note: Students will not receive credit for this course if they have already earned credit for PSCI 3075. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4934 - CU at the Capitol**

Examines current year legislative session of Colorado General Assembly. Study of various elected leaders; Colorado party system; Governor-Assembly relations; citizen and lobbyist influence; corruption and virtue in politics; current affairs. Each student will be placed in a state government internship. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4960 - Capstone in Political Science**

Course facilitates independent student research in Political Science and assists students in developing advanced writing and communication skills. Students will design, execute and present advanced research project. Restriction: Students must have completed 27 credits hours in Political Science (PSCI) with a C- or higher in order to register. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 4995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Cross-listed with PSCI 5995. Term offered: summer. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **PSCI 5000 - State of the Discipline**

Introduces graduate study in political science. Provides an overview of theories and methods in the four fields of American politics, political theory, comparative politics and international relations. Guest lectures by department faculty. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5008 - Graduate Topics in Political Science**

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **PSCI 5009 - Politics of the Budgetary Process**

Explores budgeting and financial management in the public and nonprofit sectors. An overview of public sector and nonprofit fiscal management is provided, along with thorough exploration of the political influences that affect financial decision-making. Note: Offered as a special topics course in an intensive three-weekend format, which is reflected in the syllabus. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5011 - GIS in Political Science**

Computer lab course developing methodological skills in Geographic Information Systems (GIS) in political contexts. Geospatial computerized mapping skills are important in political fields such as urban planning, electoral analysis, environmental justice, demographics, public health, and criminal justice. Designed for beginners. Cross-listed with PSCI 4011. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5013 - Philosophical Problems in the Social Sciences**

Explores the fundamentals of the conduct of inquiry; concept formation and theory construction in the social sciences; issues related to value judgments and objectivity, social praxis, human nature and political choice. Cross-listed with SSCI 5013. Prereq: Graduate standing or permission of the instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5014 - Seminar: American Politics**

Foundations of U.S. politics and contemporary political issues. Federal/state/community relations. Relationship among the three branches of the Federal government. Colorado controversies arising under the U.S. Constitution. Cross-listed with PSCI 4094. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5024 - State Politics: Focus on Colorado**

Analysis of unique aspects of Colorado government and politics. Political comparison of Colorado with other states. Preparation and discussion of research papers. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Term offered: fall, summer. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5025 - Local Governance and Globalization**

Introduces international political economy, consequences of globalization for localities, interplay between wealth and power among nations, multinational corporations, NGOs and the UN, and impact of their actions on local governments. Topics include development, aid, trade, outsourcing, eco-sustainability and global equity. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).. Cross-listed with PSCI 4025. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5044 - The Presidency**

An overview of the historical, constitutional, and functional aspects of the presidency. Focuses on the powers and vulnerabilities of the presidency and on the style and politics of the current president. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4044. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5054 - The Legislative Process**

An intensive examination of the structures and interactions through which laws are made in the United States. The major emphasis is the national level, but considerable attention is devoted

to state legislatures and local lawmaking bodies. Impact of money and interest groups. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

### **PSCI 5057 - Religion and Politics**

Exploration of: (1) theoretical perspectives on the relationship between religion and politics; (2) causes of and justifications for the historical development of the Western separation of "church and state;" (3) contemporary responses to and analyses of this separation; and (4) several current debates about public policy in America that reveal tensions between these two spheres. Cross-listed with PSCI 4057, and RLST 4500, 5500. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5075 - Gentrification and Social Equity**

Study causes and consequences of urban gentrification, and explore strategies of grassroots resistance and social equity solutions that are being mobilized to challenge the forces of gentrification. Contrast common celebrations of the waves of capital reinvestment that are fueling urban revitalization with the frequent claim of many low-income neighborhoods: "Gentrification is Class War!" Cross-listed with PSCI 4075. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5084 - Local Government and Administration**

Policy and administrative challenges faced by local government in the 21st Century. Emphasis on cities under federalism, alternative forms of city governance, and new challenges from increasingly diverse constituents. Issues of poverty, public safety, health, transportation, environment, corruption and accountability. Cross-listed with PSCI 4084. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5085 - Comparative Governance: Environment and Society**

Focuses on how public & private actors at various levels of governance address pressing social & environmental issues such as aging societies, drug abuse, air pollution & global warming. Students will learn to analyze the dynamics of conflict & cooperation, using main concepts and theories of governance literature. Cross-list PSCI 4085. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5094 - Seminar: Urban Politics**

An intensive analysis and research of major aspects of politics and government in metropolitan areas. Impact of corporations and higher levels of government on cities. Opportunities for, and barriers to, citizen participation. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5105 - Comparative Politics: Europe**

Examination and writing of research papers on selected topics of industrial democracies, especially those of Europe. Cross-listed with PSCI 4105. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5135 - Seminar: Political Economy of Latin America**

Focuses on the political economies and cultures of Latin America. Particular attention is given to the impact of the export-led growth strategy on social and political development. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5145 - Indigenous Politics**

Surveys the status of the world's native peoples and nations, and the role of law and politics in the future of indigenous peoples in the global arena. Examines questions of human rights, economic development, and international law and politics. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4146 and ETST 4146. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5176 - Gandhi's Legacy: Non-Violent Resistance Today**

This course assesses the legacy of Gandhi's nonviolent struggle against systemic oppression. We examine Gandhi's ideas and practices, consider Western images of political violence, and then focus on questions and possible answers raised by empirical studies. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4176. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5206 - Social Movements, Democracy and Global Politics**

Examines global social movements as new political actors within world politics; how theoretical perspectives in international relations and democracy address these actors; and the forms of interaction among these actors, states, and global governance institutions. Cross-listed with PSCI 4206. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5216 - Seminar: International Relations**

Introduces contending theories, empirical studies, and research methods in the field. Writing and discussion of comprehensive research papers in the field of international power politics and alternative attempts at controlling conflicts among nations. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5217 - Human Rights in Theory and Practice**

Explores the ideas of human rights and the practical efforts to actualize rights in society. Students study the theories of rights and the evolution of rights in history, as well as work with a service organization. Cross-listed with PSCI 4217. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5224 - Dictatorships in 21st Century**

Analyzes and classifies political systems of non-democratic regimes. Reviews earlier and contemporary theories that explain the origins, survival and death of authoritarian regimes. Discusses the impact of dictatorial rule on domestic developments as well as on international relations. Cross-listed with PSCI 4224. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5225 - Democracy and Democratization**

Examines the conditions under which countries turn from authoritarianism towards democracy and become stable democratic regimes. Also examines the impact of foreign and international factors on new democracies. Cross-listed with PSCI 4225. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5236 - Seminar: American Foreign Policy**

Examines selected methodological and substantive problems. Particular emphasis on elements of national decision making, America's adaptation to the changing world, and opportunities for student contributions through research and discussion. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5238 - Seminar: Comparative Foreign Policy**

Examination of the effects of leaders, groups, institutions, strategic cultures and external influences on national foreign policy-making processes and comparative analysis of foreign policy making of great and emerging powers. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5245 - Gender, Globalization and Development**

Analyzes the effects of globalization on the gendered processes of international development and strategies to empower women to achieve gender justice across race, class and national divisions. Cross-listed with PSCI 4248 and WGST 4248/5248. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5256 - Seminar: National Question and Self-Determination**

Designed to provide students with a broad theoretical and empirical understanding of the causes of ethnic conflicts and to assess different strategies of conflict resolution. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5265 - Social Justice And Globalization**

Examines issues of justice and ethical responsibility in a globalizing world. Do moral obligations of individuals and institutions end at national borders or do they encompass all human beings and extend to the environment and to future generations? Cross-listed with PSCI 4265. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5266 - International Law**

Investigates the body of law that regulates relations between nations and provides a framework for solving common problems and disputes between nations. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to

Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4266. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5274 - Conflict Resolution and Public Consent Building**

Alternative strategies for resolving or mediating conflicts facing public or nonprofit organizations and for building public consent, with emphasis on personal, interpersonal, organizational, interest-group, cross-cultural, and roots of conflict and bases for consent. Cross-listed with PSCI 4274. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5276 - Conflicts and Rights in International Law**

Explores contending interpretations and practices in international law regarding issues such as the legitimacy of humanitarian intervention, efficacy of truth commissions, tensions between truth and justice in cases of genocide and war crimes, and legal changes needed to devise viable rules. Cross-listed with PSCI 4276. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5286 - International Relations: War or Peace?**

Presents alternative theoretical frameworks for the explanation of war and peace. Investigations of the efficacy of international law, just-war norms and the UN in preventing or containing conflict. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4286. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5326 - Advanced International Political Economy: Globalization**

Engages the current debate about globalization. Conceptualizes globalization and evaluates the pros and cons of global trade and finance for developed and developing countries. Develops a model for a sustainable and just global economy. Cross-listed with PSCI 4326. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **PSCI 5354 - Seminar: Environmental Politics and Policy**

Consideration of competing models of the policy process in natural-resources decision making. Focus on selected case studies. Impact of environmental and pro-growth forces on the political process. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or



undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5365 - Global Ecological Crises**

Overview of global ecological problems such as climate change, transboundary pollutions, and loss of bio-diversity in an attempt to understand the political, economic, and cultural forces behind these problems and the status of legal and policy initiatives to address them. Cross-listed with PSCI 4365. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5414 - Non-Profits and Social Change**

Explores role of non-profits in catalyzing social change. What are obstacles and opportunities to leveraging social change through nonprofits? What factors shape non-profits to be either transformational or systemstabilizing forces? Cross-listed with PSCI 4414. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5424 - The Social Economy and Sustainable Development**

Theory and practice of social economy initiatives like worker cooperatives, micro-credit networks, mutual aid associations and the fair trade movement. How do grass-roots activists and legal frameworks affect the direction and possibilities of the solidarity economy? Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5434 - The Cooperative Movement: Politics and Policy**

Explores the history, current status, and emerging developments in the cooperative movement, both domestic and global. Topics include the political, organizational, and financial challenges and opportunities facing worker, producer, and consumer cooperatives. Examines how cooperative enterprises have adopted both reformist and revolutionary responses to the capitalist system, and how legal regimes and grassroots movements shape the future of cooperative enterprises. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5446 - Advanced Indigenous Peoples' Politics**

Builds upon the theoretical and applied foundations of PSCI 4146. Intensive study of international legal and political developments are examined, particularly in the United Nations and the Organization of American States systems. Note: this course assumes that students have completed PSCI 4144 or 4146 or equivalent. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4446. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5457 - Seminar: American Political Thought**

An intensive research in and presentation of competing ideas in the development of American political thought and practice, beginning with those of the Iroquois Confederacy and the founders of the United States Constitution. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5468 - Research Methods in Political Science**

Analysis and evaluation of research methods, techniques, and empirical materials in political science application to Internet research. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5477 - The U.S. Constitution: Law and Politics**

An intensive analysis of the most recent doctrinal developments in the areas of federal jurisdiction, federalism, separation of powers, commerce, taxing and war powers, civil liberties and civil rights. Note: this course assumes that students have completed PSCI 4477 or 4487 or equivalent. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5535 - Labor and Working Class Politics**

Explores the status of the labor movement both in the U.S. and internationally, as well as the political, philosophical, and social implications of socioeconomic class status and identity. Cross-listed with PSCI 4535. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5545 - Immigration Politics**

Introduces students to central theories of migration and a survey of immigration law and policy in the 20th century. Highlights experiences of Mexican and Latin American immigrants and

related topics, including U.S.-Mexican foreign relations, bilingual education, undocumented immigration and globalization. Cross-listed with PSCI 4545. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5548 - Labor Law and Collective Bargaining**

Explores the history, current status, and emerging developments in U.S. labor law. Examines how labor law structures worker organizing and collective bargaining efforts. Focus on labor/management relations in such processes as contract administration, workplace anti-discrimination efforts, and labor organizing rights. Explore new developments like labor law in relations to social media usage and independent contracting. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5550 - Labor, Trade Unions and the Global Economy**

Examines transnational trade unionism amid the global economy, with an emphasis on trade unions in a comparative perspective. How do labor activists and trade unions strive to establish institutions and mechanisms to assert worker rights and power in today's international political-economy? Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5555 - International Women's Resistance**

Examines local and international struggles of women to build peace and justice by resisting systems of inequality such as colonialism, racism, patriarchy, globalization, and religious intolerance. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4555, WGST 4555/5555 and ETST 4555. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5610 - Seminar: Middle East Politics**

Examines the Middle East regional system and the region's role in world politics. Investigates questions regarding politics in Iran, Iraq, Palestinian-Israeli relations, political Islam, and relations with the United States. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5615 - Seminar: Chinese Development**

Discussion of readings about China. Analysis of several of the following: party-government relations, ideology and political behavior, leadership, diplomacy, political and economic development and post-Mao reforms. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5726 - Seminar on U.S. and China Relations**

Detailed examination of historical context and current issues in U.S./China relations. Emphasis on modern period, with particular attention to changing relations in context of rising power of China. Cross-listed with PSCI 4726. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5747 - Legal Reasoning and Writing**

Introduces the fundamentals of legal reasoning and legal argumentation through intensive class discussion, formal debate and writing. Attention is given to the relationship between case and statutory law and their application in trial and appeals courts in the United States. Cross-listed with PSCI 4757, COMM 4750, 5750. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5807 - Seminar: Conflict Behavior and the Politics of Violence**

Theoretical and empirical analysis of conflict behavior with special emphasis on the explanation of political violence. Revolution, international warfare, and urban unrest are studied as forms of political violence, and the role of systematic empirical research is emphasized in the development of general theories of intergroup conflict. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5808 - Strategies of Peacebuilding**

The course investigates the theories and strategies of peacebuilding in societies that have endured intrastate conflict and/or massive human rights violations and asks whether peace and justice and democracy can or should work together and how forgiveness and reconciliation might develop. Cross-listed with PSCI 4808. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5837 - Contemporary Issues in Civil Liberties**

Conflicting rights of individuals and groups in several areas of civil liberties, including religious groups, free speech, sexual freedom, racial quotas, and anti-governmental actions and publications. This course includes case law, readings, guest speakers and case discussions. Cross-listed with PSCI 4837. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5840 - Independent Study: PSCI**

Prereq: Graduate standing or permission of the instructor. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **PSCI 5878 - War, Film, & International Law**

This course examines interactions of culture, politics, and law by chronologically investigating 20th-century war movies and the ways experiences and norms have shaped and been shaped by cinematic representations. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4878. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Prereq: Graduate standing or permission of the instructor. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **PSCI 5914 - Community Organizing and Community Development**

The theory and practice of community organizing strategies and community development innovations. How can social activists build power at the grassroots to build equitable, sustainable, and healthy communities? Cross-listed with PSCI 4914. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSCI 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing or permission of the instructor. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **PSCI 5944 - CU in the City**

Investigation of community development strategies through seminar discussions, urban walking tours, and student field placement with a local community based organization, non-profit, or public office engaged in community development work. Cross-listed with PSCI 4944. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

### **PSCI 5950 - Master's Thesis**

Prereq: Graduate standing or permission of the instructor. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 6

### **PSCI 5960 - Master's Project**

Prereq: Graduate standing or permission of the instructor. Term offered: fall, spring, summer. Repeatable. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **PSCI 5995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Prereq: Graduate standing or permission of the instructor. Cross-listed with PSCI 4995. Term offered: summer. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **PSCI 6840 - Independent Study: PSCI**

Prereq: Graduate standing or permission of the instructor. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

## **Pre-Nursing**

### **PRNU 2939 - Internship**

Pre-Health internship offering students an opportunity to obtain hands-on experience in a clinical setting; will not apply to the Biology major. Involves application of technical concepts and skills in supervised allied health environment, such as a hospital or medical clinic. Note: May not be used as an upper-division elective. Prereq: One year of general biology with a grade of 'C' (2.0) or higher, junior standing, and a GPA of 2.75 or higher. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **PRNU 3939 - Internship**

Pre-Health internship offering students an opportunity to obtain hands-on experience in a clinical setting; will not apply to the Biology major. Involves application of technical concepts

and skills in supervised allied health environment, such as a hospital or medical clinic. Note: May not be used as an upper-division elective. Prereq: One year of general biology with a grade of 'C' (2.0) or higher, junior standing, and a GPA of 2.75 or higher. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

## **Psychology**

### **PSYC 1000 - Introduction to Psychology I**

Introduces the scientific study of behavior, including an overview of the biological basis of behavior, sensation or perception, states of consciousness, learning and memory, thinking and language, intelligence, motivation and emotion. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS3 **Semester Hours:** 3 to 3

### **PSYC 1005 - Introduction to Psychology II**

Introduces the scientific study of behavior, including an overview of the history of psychology, development, personality, psychological disorders, therapy, health psychology and social behavior. PSYC 1000 is not a prerequisite for this course. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS3 **Semester Hours:** 3 to 3

### **PSYC 1111 - First Year Seminar**

Restriction: Restricted to Freshman level students. Term offered: fall. Repeatable. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **PSYC 2090 - Statistics and Research Methods**

Introduces statistics and research methods in the field of psychology. Note: Intended for those who plan to major in psychology. Completion of college algebra or equivalent is recommended. Prereq: PSYC 1000 with a C- or higher. Term offered: fall, spring, summer. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **PSYC 2205 - Lifespan Developmental Psychology for Health Majors**

This course will examine the normative physical, cognitive and soci-emotional changes and milestones that occur through the human lifespan highlighting health-related issues at each stage. Prereq: PSYC 1000 or PSYC 1005 with a C- or higher. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 2220 - Biological Basis of Behavior**

Introduces the biological basis of behavior. This course will feature concepts like neurons, synaptic and hormonal transmission, and physiological set-points. Behavior of simple (invertebrate) and complex organisms (vertebrates) will be related to the activity of specific brain neural networks. Prereq: PSYC 1000 or BIOL 2051 with a C- or higher. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SC2 **Semester Hours:** 3 to 3

### **PSYC 3090 - Research Methods in Psychology**

Covers principles of experimental methodology in Psychology. Includes active participation in data collection and interpretation, presentation of results, evaluation of scientific literature, scientific writing and advanced statistical concepts as they relate to the field of Psychology. Prereq: PSYC 1000, 1005 and 2090 with a C- or higher. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3144 - Human Cognition**

Studies information processing in humans, with emphasis on memory, thinking and language. Prereq: PSYC 1000 with a C- or higher. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3145 - Industrial and Organizational Psychology**

Surveys the fields of industrial and organizational psychology. These fields apply psychological principles to improving productivity and satisfaction in the workplace. Topics include motivation, leadership, group processes, team functioning, occupational health, selection and training of employees, and performance management. Prereq: PSYC 1000 and 1005 with a C- or higher. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3205 - Human Development I: Child Psychology**

Studies human development covering birth, infancy, toddler, preschool and school-aged child. Covers biological, cognitive and social processes. Prereq: PSYC 1000 and PSYC 1005 or PSYC 3215 with a grade of C- or higher. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3215 - Human Development II: Adolescence and Adulthood**

Study of human development from adolescence through adulthood and aging. Covers biological, cognitive, and social processes. Prereq: PSYC 1000 and PSYC 1005 or PSYC 3205. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3222 - Principles of Learning and Behavior**



Introduces the scientific study of learning and behavior, focusing on "Behaviorism." Principles of operant and classical conditioning are discussed. A particular emphasis is placed on the relevance and application of these principles to understanding human behavior and psychopathology. Prereq: PSYC 1000 with a C- or higher. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3235 - Human Sexuality**

Examines the physiological, psychological, and social psychological bases of human sexuality. Research on the range of sexual behaviors, individual sexual response, sexual development, sexual dysfunction, and variants of sexual orientation. Prereq: PSYC 1000 and 1005 with a C- or higher. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3254 - Introduction to Animal Behavior**

Surveys the behavior of nonhuman animals, emphasizing the evolution through natural selection. One semester of general biology, biological anthropology, or other course emphasizing evolutionary perspective is strongly recommended as preparation for optimal student success. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3262 - Health Psychology**

An overview of the scientific study of attitudes, behaviors, and personality variables related to health and illness. Emphasis is on the interaction of biological, psychological, and social factors that cause illness and influence its treatment and prevention. Prereq: PSYC 1000 and 2220 with a C- or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3263 - Hormones and Behavior**

The hormonal regulation of behavior will be the primary focus of this course. Topics include: hormonal basis of sexual differentiation and behavioral differences, parental behavior, biological rhythms, aggression, mood and stress. Prereq: PSYC 1000 and 2220 with a C- or higher. Cross-listed with PSYC 5263. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3264 - Exercise, Brain and Behavior**

This course explores the impact of physical activity status-being sedentary or physically active-on brain function and behavior. Topics include effects of exercise on cognitive function, mood disorders, stress, anxiety, sleep and drug addiction. Emphasis will be placed on understanding the neurobiological mechanisms by which exercise impacts behavior. Students who have received credit for this topic listed under PSYC 3600 may not receive credit for this course. Prereq: PSYC 1000 and PSYC 2220 with a C- or higher. Term offered: fall. Cross-listed with PSYC 5264. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3265 - Drugs, Brain and Behavior**

Explores the pharmacological, biological, and behavioral basis of drug effects. Topics include mechanisms of drug action, brain reward pathways, role of environment and history on drug effects, and the impact of science on drug abuse and medication development. Prereq: PSYC 1000 and 2220 with a C- or higher. Cross-listed with PSYC 5265. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3305 - Abnormal Psychology**

This course applies a scientific approach to the examination of the symptoms, etiologies, and treatments of mental illnesses, including disorders of mood, anxiety, stress, addictions and those seen in childhood and older age. Prereq: PSYC 1000 and 1005 with a C- or higher. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3385 - Psychology of Mindfulness**

This course will explore significant psychological, neurological, historical, societal and cultural aspects of mindfulness. It will integrate this current knowledge with more traditional aspects of the concept through classroom activities, guest lecturers, projects and field trips. Prereq: PSYC 1000 or 1005 with a C- or higher. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3405 - Family Psychology**

Overview of theory and research pertaining to marital and family structure, functioning and dynamics. Prereq: PSYC 1000 and 1005 with a C- or higher. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3415 - Experimental Social Psychology**

Surveys the field of Social Psychology, the study of the way in which cognitions, emotions, and behaviors are influenced by the presence, or perceived presence, of others. Heavily focuses on experimentation and experimental methods within the field of Social Psychology. Prereq: PSYC 1000 and 1005 with a C- or higher. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3460 - Military Clinical Psychology**

This course focuses on clinical psychological issues facing service members, veterans, and military families. Topics include contemporary military culture, challenges of the military lifestyle/deployment/reintegration, specific types of military trauma, psychological issues of PTSD, TBI, depression, substance abuse, and suicidality, and psychological interventions for these issues. Prerequisite: PSYC 1005 with a C- or higher. Students will not earn credit for this

course if they have already earned credit for PSYC 3600 with a similar topic title. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3505 - Psychology and the Law**

Examines the legal and extralegal applications of psychology, such as assessment of insanity and competence, psychologists as expert witnesses, accuracy of eyewitness accounts, and issues relating to employment discrimination. Prereq: PSYC 1000 and 1005 with a C- or higher. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3600 - Topics in Psychology**

Studies special topics to be selected by the instructor. Note: May be repeated for credit. Term offered: fall, spring. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **PSYC 3611 - Psychology of Women**

Reviews psychological theories and research of women's social, cultural, emotional and behavioral experience. Examines the sociocultural context of women's experience and explores women's socialization, developmental issues, cognitive abilities and achievement motivation, personality variables, stereotypes, psychological disorders, victimization, intimacy and sexuality. Prereq: PSYC 1000 and 1005 with a C- or higher. Term offered: fall, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3612 - Domestic Abuse**

Examines the nature and extent of domestic violence. Personal characteristics and dynamics that contribute to spouse abuse are reviewed. Theories and research in the general field of family violence, victims' and perpetrators' treatment, and child abuse are discussed. Prereq: PSYC 1000 and 1005 with a C- or higher. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3615 - Positive Psychology**

This course provides an introduction to the science of positive traits, subjective experiences and institutions. It focuses on the empirical study of the factors that enable humans to flourish, develop resilience, mature and master life's challenges. Prereq: PSYC 1000 and 1005 with a C- or higher. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3724 - Developmental Psychobiology**

Explores the biological influences on the development of brain and behavior. Emphasis is on the evolution and development, the role of experience in prenatal and postnatal development, the ontogeny of sensory systems, learning and memory, and the biological bases of language

acquisition. Prereq: PSYC 1000/1005 or BIOL 2051/2061 with a C- or higher. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3810 - Neuropsychology**

Brain organization and function and its relationship to human memory, language, perception, and other cognitive abilities. Covers the application of clinical neuropsychology to working with individuals that have neurological disorders. Prereq: PSYC 1000 and 2220 with a C- or higher. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3822 - Aging, Brain and Behavior**

Examines the aging process, behavioral changes during senescence and the accompanying changes in the aged brain. Changes that are part of healthy aging are studied, as will age-related brain disorders. Prereq: PSYC 1000 and 2220 with a C- or higher. Cross-listed with PSYC 5822. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3832 - Neural Basis of Learning**

Survey of advances in neuroscience that further the understanding of how neurons within our brains are modified by experience and thus influence subsequent behavior. Includes discussions of how these mechanisms contribute to various psychopathologies. Prereq: PSYC 1000 and 2220 with a C- or higher. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 3939 - Internship**

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: Students must have Junior standing, have completed at least 12 hours in PSYC courses with a 2.0 GPA in PSYC courses and must work with Experiential Learning Center advising to complete a course contract and gain approval to enroll. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **PSYC 4054 - Behavioral Neuroscience**

The morphological, neurochemical and physiological bases of behavior. Emphasis is on structure and function of the brain. Prereq: PSYC 1000/PSCH 1001, 1005, 2090, 2220, 3090 and (6 credits hours or 2 courses from PSYC 3050-4990) with a C- or higher. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 4090 - Research Design and Development**

This advanced writing and research methods course is designed to help students develop independent research ideas into formal products, such as a thesis proposal, grant application, presentation, and study protocols. Prereq: PSYC 3090 and instructor permission. Cross-listed with MARC 4090. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 4111 - Senior Seminar in Psychology: Career Capstone**

This course provides a focused integration of the skills and knowledge gained through the psychology major curriculum. As a capstone course, it will prepare students to apply what they have learned to their professional careers. Prereq: PSYC 3090 with a grade of C- or higher. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 4455 - Theories of Personality**

An in-depth look at several major theories of personality, including those from psychodynamic, behavioral, and humanistic schools of thought. Students are required to think actively and abstractly, and communicate their ideas in papers and classroom contributions. Prereq: PSYC 1000 and 1005 with a C- or higher. Term offered: fall, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 4485 - Psychology of Cultural Diversity**

Studies diversity in the development of the individual across Asian, Black, Hispanic, and Native American cultures. The experience of self, role of the family, expression of emotions, and psychology of prejudice are emphasized. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 4511 - History of Psychology**

Development of psychological theories since 500 B.C. Schools of psychology and their adherents. Readings of primary and secondary sources. Prereq: PSYC 1000/PSCH 1001, 1005, 2090, 2220, 3090 and (6 credits hours or 2 courses from PSYC 3050-4990) with a C- or higher. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 4680 - Behavioral & Biomedical Sciences Research Seminar**

Introduces research in the behavioral and biomedical sciences. Students will learn about research programs at CU Denver and other centers, present their own research, and interact with the local scientific community. Prereq: permission of the instructor. Cross-listed with MARC 4680. Term offered: fall, spring. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 2

### **PSYC 4730 - Clinical Psychology: Ethics and Issues**

An in-depth exploration of the values and ideas that guide professional practice in psychology, including professional codes of conduct and philosophical ethical principles. Topics include confidentiality, informed consent, competence, integrity and respect. Prereq: 1000, 1005, 2090, 2220 and 3090 with a C- or higher. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 4780 - Behavioral & Biomedical Sciences Research: Ethics & Issues**

Students will critically review and analyze some of the major ethical and policy issues that arise during the conduct of basic and applied behavioral research. Prereq: PSYC 1000, 1005, 2090, 2220 and 3090 with a C- or higher or instructor permission. Term offered: fall. Cross-listed with MARC 5780. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 4840 - Independent Study: PSYC**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Prereq: Permission of instructor. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **PSYC 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **PSYC 4939 - Internship**

Prereq: Students must have Junior standing, have completed at least 12 hours in PSYC courses with a 2.0 GPA in PSYC courses and must work with Experiential Learning Center advising to complete a course contract and gain approval to enroll. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **PSYC 5164 - Psychology of Perception**

Studies sensory processes and perceptual variables. Covers processes related to vision, audition, gustation and olfaction. Prereq: PSYC 1000 and 2220 with a C- or higher or Graduate standing. Cross-listed with PSYC 4164. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 5263 - Hormones and Behavior**

The hormonal regulation of behavior will be the primary focus of this course. Topics include: hormonal basis of sexual differentiation and behavioral differences, parental behavior, biological rhythms, aggression, mood and stress. Prereq: PSYC 1000 and 2220 with a C- or higher or Graduate standing. Cross-listed with PSYC 3263. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 5264 - Exercise, Brain and Behavior**

This course explores the impact of physical activity status-being sedentary or physically active-on brain function and behavior. Topics include effects of exercise on cognitive function, mood disorders, stress, anxiety, sleep and drug addiction. Emphasis will be placed on understanding the neurobiological mechanisms by which exercise impacts behavior. Students who have received credit for this topic listed under PSYC 3600 may not receive credit for this course. Prereq: PSYC 1000 and PSYC 2220 with a C- or higher or Graduate standing. Term offered: fall. Cross-listed with PSYC 3264. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 5265 - Drugs, Brain and Behavior**

Explores the pharmacological, biological, and behavioral basis of drug effects. Topics include mechanisms of drug action, brain reward pathways, role of environment and history on drug effects, and the impact of science on drug abuse and medication development. Prereq: PSYC 1000 and 2220 with a C- or higher or Graduate standing. Term offered: fall, spring, summer. Cross-listed with PSYC 3265. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 5803 - Principles of Psychological Testing**

Principles underlying construction, validation, and use of tests of ability, intelligence, and personality and of attitude surveys. Covers statistical topics such as content and construct validity, item analysis, and reliability analysis. Prereq: Admission to psychology graduate program. Cross-listed with PSYC 4803. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 5822 - Aging, Brain and Behavior**

Examines the aging process, behavioral changes during senescence and the accompanying changes in the aged brain. Changes that are part of healthy aging are studied, as will age-related brain disorders. Prereq: PSYC 1000 and 2220 with a C- or higher or Graduate standing. Cross-listed with PSYC 3822. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 5840 - Independent Study: PSYC**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

## **PSYC 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **PSYC 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

## **PSYC 5990 - Topics in Psychology**

Advanced study of special topics to be selected by the instructor. Note: May be repeated for credit. Prereq: Permission of instructor. Cross-listed with PSYC 4990. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

## **PSYC 6200 - Developmental Psychopathology**

The study and prediction of maladaptive behaviors and processes across time. Students develop a sophisticated understanding of important concepts related to emotional and behavioral problems in children and adolescents, including DSM-IV-TR diagnostic criteria and the basic tenets of successful intervention. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PSYC 6840 - Independent Study**

A structured experience, planned and implemented with the assistance of a sponsoring faculty member in ongoing programs of research or other scholarly activity. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Admission to the graduate program in psychology. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

## **PSYC 6841 - Independent Study: PSYC**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes,



to the Graduate School for approval. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **PSYC 6910 - Research Practicum**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 3

### **PSYC 6930 - Clinical Internship**

Clinical experience in a setting which provides supervision by qualified professionals. Students participate in assessment, intervention, and/or evaluation and research. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Completion of 24 hours of course work in the UCD Psychology MA, Clinical program. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

### **PSYC 6950 - Master's Thesis**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 6

### **PSYC 7144 - Advanced Cognition and Emotion**

Overview of contemporary psychological theories and research in human learning, memory, cognition, and emotion. Emphasis on cognitive and affective neuroscience and the physiological-psychological organization of functional systems. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 7205 - Advanced Developmental Psychology**

A survey of neurobiological, cognitive, social and cultural processes in human development from conception through adulthood. Prereq: Admission to the Psychology MA, Clinical program or Clinical Health Psychology Ph.D. program or with permission of instructor and a graduate program director. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 7220 - Advanced Biological Bases of Behavior**

Survey course of advances in psychobiology which inform our understanding of the brain and behavior with special emphasis on perception, action, and cognition. A major goal of the course is to foster appreciation of the importance of interdisciplinary research. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 7262 - Health Psychology I**

Part I of a 2-course sequence. Presents crucial aspects of health psychology and behavioral medicine, including theoretical models, anatomy and physiology epidemiology, health promotion and primary prevention of medical problems. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 7350 - Psychotherapy I**

Surveys some of the major schools of psychotherapy, including cognitive and cognitive-behavioral therapies as well as motivational interviewing. Coverage also includes therapy techniques, process of therapy, and treatment-outcome research. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 7360 - Psychotherapy II**

Theoretical approaches and techniques used in research, assessment and treatment of major forms of psychopathology, including anxiety, depression, schizophrenia and substance abuse, as well as marital problems and childhood disorders. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 7400 - Child Assessment**

Psychometric theory and practice in assessment of children with focus on the diagnostics, the WISC-III, and personality assessment. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 7410 - Assessment I: Personality**

Reviews the process of selection, evaluation, administration, utilization, and interpretation of psychological tests related to psychosocial functioning. Issues of validity, reliability, utility, clinical judgement, ethics, and cross-cultural competence are reviewed. Prereq: Admission to the Clinical Health Psychology Ph.D. program, Clinical Psychology MA program, or by permission of instructor and graduate program director. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PSYC 7420 - Assessment I: Intellectual and Cognitive Assessment**

Reviews the process of selection, evaluation, administration, utilization, and interpretation of psychological tests related to cognitive functioning. Issues of validity, reliability, utility, clinical judgement, ethics, and cross-cultural competence are reviewed. Prereq: Admission to the Clinical Health Psychology Ph.D. program, Clinical Psychology MA program, or by permission of instructor and graduate program director. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PSYC 7485 - Diversity in Clinical Psychology**

Designed to foster understanding of diversity and its implications for clinical practice, research, and mental health policy. Students will learn to orient to the worldviews of clients from diverse backgrounds and to tailor their interventions to competently serve individuals in a pluralistic society. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PSYC 7490 - Topics in Health Psychology Summer Lecture Series**

Weekly lectures given by Clinical Health Psychology department faculty, advanced graduate students, alumni and area professionals on selected topics in the field. Note: This course is required for first, second and third-year graduate students. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

## **PSYC 7500 - Advanced Psychopathology**

Key features of major mental disorders in adult populations. Includes classification, DSM diagnosis, epidemiology, course and prognosis, age/culture/gender features, etiology and biological bases. Prereq: Admission to Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PSYC 7511 - Historical and Philosophical Foundations of Psychology**

Philosophical and historical antecedents to contemporary psychology, with particular emphasis on clinical psychology. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PSYC 7520 - Experimental Psychopathology**

Theories of etiology of major psychopathologies, including: personality disorders, anxiety disorders, affective disorders, substance use disorders and schizophrenia and other psychoses.

Restrictions: Restricted to Graduate majors in PSYC and PSYH. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 7700 - Clinical Research Methods**

Principles of research methodology in clinical psychology. Major topics include research ethics, subject recruitment, ethnic and cultural considerations, selecting and evaluating research measures, epidemiology and comorbidity, taxonomic and outcome research and research design. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 7710 - Multivariate Statistics**

Topics include multiple regression, logistic regression, factor analysis, and structural equation modeling. Both experimental and non-experimental designs will be considered. Students will learn underlying theory of these techniques as well as how to perform analyses using software like SPSS and Mplus. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 7713 - Advanced Statistics**

Experimental design and analysis of controlled interventions and evaluations. Emphasis on multifactor analysis of variance, orthogonal contrasts, post-hoc tests, multiple regression, and analysis of co-variance. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 7730 - Ethics and Professional Issues in Psychology**

An in-depth exploration of the values and ethical ideas that guide professional practice in psychology, including philosophical ethical principles and professional codes of conduct. Specific topics include confidentiality, informed consent, competence, and respect for persons. Students are expected to be able to think about and communicate difficult ethical concepts in the form of class participation and a major paper. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 7830 - Clinical Interviewing**

Students practice interviewing and develop skills, including the ability to listen actively, to critique their own work and the work of others, and to think carefully about issues that arise in clinical work with clients. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **PSYC 7910 - Clinical Practicum**

Clinical experience under supervision of licensed, doctoral-level professionals. Students participate in assessment, intervention, and/or evaluation and research in a variety of settings. Note: All field placements must be approved by the Director of Clinical Training (DCT) in advance of registration. Students should enroll in 1 credit hour during year one (spring and summer semesters only) and 3 credit hours during years two (fall, spring, and summer semesters) and three (fall semester only). A total of 14 credit hours of PSYC 7910 are required. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall, spring, summer. Repeatable. Max Hours: 14 Credits. **Semester Hours:** 1 to 3

### **PSYC 7911 - Clinical Practicum II**

Clinical experience under supervision of licensed, doctoral-level professionals. Students participate in assessment, intervention, and/or evaluation and research in a variety of settings. Note: All field placements must be approved by the Director of Clinical Training (DCT) in advance of registration. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **PSYC 8100 - Clinical Behavioral Medicine**

Presents basic assessment and psychotherapeutic techniques used for patients with various disorders, focusing on cognitive-behavioral methods and the unique needs of patients experiencing chronic disease. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 8200 - Teaching Skills Workshop**

Students will learn, explore, and practice the basic principles and strategies of good teaching. We will also explore research and theory for teaching at the college level. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 8262 - Health Psychology II**

Part II of a 2-course sequence. Further aspects of health psychology and behavioral medicine, including health service utilization, patient-provider relationships, social support, terminal

illness and issues related to chronic disease states. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 8501 - Primary Care Psychology**

Examines emerging trends in the role of professional psychology and psychologists serving as health care providers in primary care medical settings. Knowledge, skills and attitudes as they apply to competencies unique to primary care will be covered. Prereq: PSYC 7262 and PSYC 8262 and PSYC 7730 with a B- or higher. Restriction: Restricted to PSYH-PHD majors within the College of Liberal Arts and Sciences. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 8502 - Cardiovascular Health Psychology**

The course focuses on research and clinical practice regarding psychological factors related to cardiovascular functioning and disease. The physiology of the cardiovascular system will be presented and primary and secondary prevention as related to psychological functioning will be emphasized. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 8503 - Group Interventions in Health Psychology**

The course will serve as an introduction to group psychotherapy and group process principles with a focus on the design, implementation and delivery of evidence-based group interventions in the field of Clinical Health Psychology. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 8550 - Advanced Social Psychology**

This is a graduate level seminar that broadly covers the social bases of behavior from a social psychological perspective. It includes discussion of topics such as group processes, attribution theory, discrimination, and perspectives on attitudes. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PSYC 8910 - Advanced Clinical Practicum**

Advanced clinical experience under supervision of licensed, doctoral-level professionals. Students participate in assessment, intervention, and/or evaluation and research in a variety of health care settings to address the interface between physical and psychological functioning. Note: All field placements must be approved by the Director of Clinical Training (DCT) in advance of registration. Students should enroll in 3 credit hours during years three (spring and summer semesters only) and four (fall and spring semesters only). A total of 12 credit hours of PSYC 8910 are required. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 4

## **PSYC 8938 - Pre-Doctoral Internship**

Intensive full-time clinical experience with supervision by licensed, doctoral-level professionals. Interns participate in assessment, intervention, and/or evaluation and research in a variety of settings. Students apply through the Association of Psychology Postdoctoral and Internship Centers (APPIC) national matching process. Note: All field placements must be approved by the Director of Clinical Training (DCT) in advance of registration. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

## **PSYC 8990 - Doctoral Dissertation**

Independent research on the doctoral dissertation in Clinical Health Psychology. Prereq: Admission to the Clinical Health Psychology Ph.D. Program. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 10 Credits. **Semester Hours:** 1 to 10

## **Public Administration**

### **PUAD 1000 - Public Service Online Success and Career Exploration**

Offers Public Service majors the chance to explore their career field and adapt to an online learning environment. Topics will include Canvas tips, online course etiquette, community building for the online learner, how online students can utilize CU Denver student-success resources, writing and citation tips, and contemporary time management techniques. Restriction: Restricted to BAPS Majors only. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **PUAD 1001 - Introduction to Leadership and Public Service**

This course provides a broad introduction to public service and encourages exploration of personal values and interests related to leadership, community, and life choices. Multiple paths to advancing the public good are explored, including volunteerism, citizenship, and service in government and nonprofits. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 2001 - Management for Public Service**

Learn how managers in public sector organizations foster human capital and manage performance in a diverse, inclusive, and collaborative workforce. Examine strategic management techniques, human resource law and procedures. Explore the values of character and competence in creating effective organizations. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 3001 - Financial Management for Public Service**

Explore topics in public financial management including budget preparation, monitoring, and reporting. Learn how to build public service capacity through sound fiscal discipline and equitable allocation of resources for the public good. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 3002 - Program Design, Evaluation, and Decision-Making**

Effective public service program outcomes are systematically managed, monitored, and evaluated. Learn the analytical, critical thinking, and problem-solving skills required for program design, implementation, evaluation, and evidence based decision-making. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 3003 - Introduction to Nonprofit Organizations**

Explore the historical background, development, role, auspices, organization, and purposes of nonprofit agencies. Expand awareness of the scope and breadth of the nonprofit sector in the U.S., examine the inner workings of nonprofit organizations as the foundation for further study. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 3004 - Managing Nonprofit Organizations**

Examine leadership and decision-making theory and practice in the nonprofit sector. Explore classic and contemporary theories on leadership, management, governance and organizational effectiveness of nonprofit organizations. Techniques for effective board meetings, committee work, development of board members, and policy development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 3005 - Collaboration Across Sectors**

Organizations across sectors respond to complex problems with innovative and flexible responses through networks. Managing within and across organizations is essential to effective performance in a networked system. Explore collaborative governance across sectors--nonprofit, for-profit, and public--with analyses and applications. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 3110 - Seminar in Nonprofit Management**

This course provides an overview of the principles and concepts that are unique to nonprofit management. Topics include executive management, funding diversity, human resource management, marketing, volunteer management and ethics. Students are also given an introduction to the history and the importance of the nonprofit sector. Cross-listed with PUAD 5110 and CRJU 5010. Max hours: 3 Credits. **Semester Hours:** 3 to 3



### **PUAD 4001 - Ethics in Public Service**

Understand ethics in public service, explore ethical concerns in public affairs, and confront ethical challenges in government and nonprofit organizations. Through theoretical and case study readings and applied projects, students analyze ethical issues and proposed responses. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 4002 - Leading for the Public Good**

Explore how service and regulation intersect and challenge public servants to balance management, politics, and law. Investigate cultural competency, social justice, and citizenship, and issues related to organizational development, leadership, motivation, change management, and teamwork. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 4003 - Effective Communication for Public Service**

Cultivate skills in making a well-reasoned argument, locating supporting evidence, speaking and writing persuasively, and effectively fostering partnerships across sectors and media. Address varied audiences with presentations that communicate diverse viewpoints in the public service context. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 4004 - Building Public and Financial Support for Nonprofit Organizations**

Examines methods, techniques, and directed experience in fundraising for nonprofit agencies. Explores relationships with umbrella organizations, government funding, grantsmanship, budget control, and accountability. Discusses social entrepreneurship and social innovation. Examines communications, marketing, and public relations intersection with resource development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 4006 - Organizational Development**

Examine structures, life-cycles, and change dynamics of government and nonprofit organizations including organizational culture, the relationship between organizational structure and service provision, and organizational strategy and effectiveness. Learn diagnostic and assessment tools, methods, and processes for improving organizational performance. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 4007 - Nonprofit HR: Governance, Staff, Volunteer Management**

Current issues in human resource administration for employees of nonprofit organizations. Topics include such areas as recruitment, staff development, volunteer management, performance, evaluation, labor-management issues, and affirmative action. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 4008 - Current Issues in Public Sector Organizations**

Explore the impact on public sector organizations of emergent issues such as globalization, changing demographics of the citizenry and workforce, sustainability, declining budgets, and information technology. Examine ways public sector organizations adapt to these trends. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 4009 - Human Service Organizations**

Provides an overview of human services delivery in government and nonprofit organizations. Explore causes and conditions that give rise to the need for effective and equitable human service organizations. Learn essential skills including cultural competencies, boundaries, and collaboration. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 4010 - Public Service in Emergency Management and Homeland Security**

Introduces emergency management and homeland security including: management of hazards, emergencies, disasters, and the networks of government and nonprofit organizations providing services. Focuses on principles of emergency management and homeland security at state and local jurisdictional levels. Cross-listed with PUAD 5650, CRJU 4010, and CRJU 5650. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 4012 - Principles of Emergency Management**

Introduces the discipline and practice of emergency management. Topics include administrative practice and processes by which public policy shapes governmental responses to hazards, emergencies, and disasters. Cross-listed with PUAD 5655, CRJU 4012 and CRJU 5655. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 4020 - Social Entrepreneurship**

Social entrepreneurship, practices, theories, and allied concepts. Using private, nonprofit, and government examples, explore innovation, creativity, profit for social welfare, and innovative management. Advance an organization's social good mission, and increase effectiveness, accountability, and efficiency through market-based techniques. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 4140 - Nonprofit Financial Management**

Provides a grounding in financial management for the "non-accountant" by focusing on an array of knowledge and management skill areas necessary for allocating and controlling resources and for analyzing, reporting and protecting the fiscal health of the organization. Topics include key accounting principles, understanding and using financial statements, the budget development process, cash flow analysis, banking relationships, using the audit report,

maximizing investment policy and strategy, and understanding the boundaries of tax exemption. Cross-listed with PUAD 5140 and CRJU 5140. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 4145 - Philanthropy**

Today, the organized field of philanthropy and its companion field, impact investing, are growing at a remarkable speed. This course will explore the origins of philanthropy and impact investing and provide students with an in-depth understanding of how philanthropy works today and the nuances that exist among different forms of philanthropy and investment: individual giving, foundations, corporate philanthropy, and impact investing. It will also explore new trends among individual and institutional investors and unpack the different approaches that funders are taking to influence how services are delivered and the striking efforts to affect systems changes. Cross-listed with PUAD 5145. Max hours: 3 credits **Semester Hours:** 3 to 3

### **PUAD 4160 - Nonprofit Boards and Executive Leadership**

The important roles and responsibilities of a voluntary board of directors and the process of governing are often misunderstood. This course explores the special powers of a nonprofit board of directors as framed by and responsive to public policy. From the perspective of organizational behavior and theory, the course examines the leadership role and interplay between board members and the executive director. The examination includes a comparative analysis of different governing models, and explores fundamental questions of board composition, the role of advisor boards, achieving effective board meetings, the realm of liability, using committees, and the board's role in fundraising, among other special subject matter. Crosslisted with PUAD 5160. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 4220 - Human Resource Management**

Covers human resource functions in public and nonprofit agencies. Topics include job analysis, compensation, recruiting, selection, rewarding, training and development. Contemporary issues concerning civil service reforms are also presented. Cross-listed with PUAD 5220. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 4325 - Public Private Partnerships**

This course has been designed to introduce students to public private partnerships (PPPs) as a field of study and practice using Colorado as a laboratory for current practice, policy, strategy, management and finance. Students will engage current examples of PPPs as cases, learn and exchange in class presentations with guest lecturers currently leading PPPs and evaluate projects in class assignments doing research, analysis, and field interviews. Students will enhance their knowledge as well as skills commonly used in public, private, nonprofit and enterprise management and the public policy context and narrative of PPPs in international and U.S. practice. Cross-listed with PUAD 5325. Max hours: 3 credits **Semester Hours:** 3 to 3

## **PUAD 4440 - Negotiation and Conflict Resolution**

Focuses on concepts and skills necessary to negotiate policy and management decisions and manage internal and external conflicts. Designed to help students understand the dynamics that affect negotiations and to apply the principles and strategies of negotiation in a variety of decision making and dispute resolution contexts. Cross-listed with PUAD 5440. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 4600 - Special Topics in Public Service**

This highly specialized seminar addresses cutting-edge and emerging developments in the field of public service and provides students and faculty with the opportunity to explore significant themes, issues and problems from a broad interdisciplinary perspective. Topics vary from semester to semester. Repeatable. Max hours: 18 Credits. **Semester Hours:** 1 to 6

## **PUAD 4630 - Economic Development**

As governments search for new ways to be efficient, improve performance and leverage resources, they are also looking at their communities, states and regions in terms of competitiveness, international trade and globalization innovation, collaboration and partnerships. This course will look at practices where economic development includes these elements: the Colorado Innovation Network, the Colorado Office of Economic Development and International Trade, the Metro Denver and Denver South Economic Development Partnerships, Mile High Connects, the Downtown Denver Partnership, and public-private partnerships across multiple sectors in transportation, broadband, water and innovation. Students will develop an economic development strategy based on knowledge and tools learned in the course. Political and professional leadership will be part of the dialog. Crosslisted with PUAD 5630. Max hours: 3 credits **Semester Hours:** 3 to 3

## **PUAD 4633 - Economic Development**

As governments search for new ways to be efficient, improve performance and leverage resources, they are also looking at their communities, states and regions in terms of competitiveness, international trade and globalization innovation, collaboration and partnerships. This course will look at practices where economic development includes these elements: the Colorado Innovation Network, the Colorado Office of Economic Development and International Trade, the Metro Denver and Denver South Economic Development Partnerships, Mile High Connects, the Downtown Denver Partnership, and public-private partnerships across multiple sectors in transportation, broadband, water and innovation. Students will develop an economic development strategy based on knowledge and tools learned in the course. Political and professional leadership will be part of the dialog. Cross-listed with PUAD 5633. Max hours: 3 credits. **Semester Hours:** 3 to 3

## **PUAD 4638 - Colorado Politics, Policy, and Administration**

This course focuses on the state-level policy-making process in Colorado, and how that process is affected by local, state, and federal politics, administration, and other policy-making constraints applicable to the state. Substantive topics covered will vary, but students will be exposed to a wide range of perspectives and experiences from practitioners and policy influencers engaged in state-level politics, policy-making, and administration. Cross-listed with PUAD 5638. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 4740 - Sustainable Energy Policy**

This course will cover the basic principles and operation of policy and regulation that impact the production and use of energy (with a focus on transportation and electricity generation) from all of the major sources currently available and used. We will analyze (and, through a sustainability lens, critically evaluate) energy from water (hydroelectric, hydrokinetic), coal, domestic and international petroleum, natural gas and nuclear reactors. A significant portion of the course will focus on electricity generation and associated policy, technologies and regulation. In the context of each energy source and use, we will review and discuss sustainability practices, policies, and, issues. Cross-listed with PUAD 5740. Max hours: 3 credits **Semester Hours:** 3 to 3

### **PUAD 4840 - Independent Study**

This course consists of faculty-guided research in an area of mutual interest to the student and instructor. Students are responsible for selecting their area of inquiry prior to contacting the instructor. Permission of instructor is required. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **PUAD 4939 - Public Service Internship**

The internship course, required for all Public Service majors unless waived, provides career-related experiential learning in a government agency or nonprofit organization. Students must apply to the internship course in the semester before they hope to enroll and obtain permission from their advisor and the instructor prior to enrolling. Prereq: PUAD 1001 plus any other 2000 level (or higher) PUAD course, a GPA of 2.0, and a minimum of 15 UCD credit hours completed. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 9

### **PUAD 5001 - Introduction to Public Administration and Public Service**

Examines fundamental theories, structures, and processes of governance in the United States, including the evolving roles and responsibilities of public, nonprofit, and private sectors. Covers topics including public service values and ethics, cross-sector and intergovernmental partnerships, and comparative public administration. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 5002 - Organizational Management and Behavior**

Course covers elements which, when combined, create a resilient learning organization. Topics include organization theory and design, managing human capital, group development and performance, inter- and intra-group communication, information management, and ethical decision-making. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 5003 - Research and Analytic Methods**

Examines qualitative and quantitative research methods used to answer questions and inform decisions in public and nonprofit settings. Methods covered include reviewing scholarly literature; formulating research questions; selecting appropriate design, data collection and sampling strategies; and analyzing data. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 5004 - Economics and Public Finance**

Evaluates the role of government with respect to provision and financing of public goods. Explores 5 broad topics: 1) welfare & microeconomics 2) expenditure theory 3) resource mobilization (emphasis on taxation) 4) fiscal federalism 5) basic budgeting & analytical tools. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 5005 - The Policy Process and Democracy**

Introduces theoretical and applied studies of the policy process. Policy process includes how (I) issues are conceptualized and brought forward as problems needing action; (II) policies are designed and selected; and (III) enacted policies are implemented, monitored, evaluated, and revised. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 5006 - Public Service Leadership and Ethics**

Provides understanding of the role played by leaders within and across public and nonprofit organizations, and in complex social environments. Examines theories of leadership, skills and processes employed by effective leaders, and ethical conduct of leaders in shaping societal values. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 5007 - Qualitative Research Methods**

Focuses on qualitative research methods that incorporate field work techniques such as observation, interviews, and content analysis. The main objective is to discover practicalities

and limitations of ethnographic methods with a comparative methodology perspective. Students are required to conduct a research project. Prereq: PUAD 5003 with a B- or higher. Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 7007. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5008 - Evidence-Based Decision-Making**

Course provides opportunities for students to use skills developed in Research and Analytic Methods (including developing research/evaluation questions, designing surveys/interview guides, and analyzing data) to inform decisions and/or develop recommendations in multiple policy, management, and program evaluation scenarios. Prereq: PUAD 5003 with a B- or higher. Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5010 - Rocky Mountain Program**

This program encourages participants to examine their public sector roles, develop an understanding of their leadership styles, develop communication skills, and enhance their ability to think more systematically and strategically in their positions. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5030 - Denver Community Leadership Forum**

Designed to increase cross sector cooperation and enhance personal leadership skills and knowledge, program is administered annually February to November. Students gain skills in conflict management, participate in Outward Bound program in July, and learn leadership theories and concepts from a variety of presenters and trainers. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5110 - Seminar in Nonprofit Management**

This course provides an overview of the principles and concepts that are unique to nonprofit management. Topics include executive management, funding diversity, human resource management, marketing, volunteer management and ethics. Students are also given an introduction to the history and the importance of the nonprofit sector. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 3110 and CRJU 5010. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5115 - Effective Grant Writing for Nonprofit and Public Sector Managers**

This course is designed to provide students with the knowledge and skills to perform one of the most critical functions for any public or nonprofit sector agency today: gaining funds through

proposals. Students learn how to locate and analyze funding opportunities through public and private funders and how to research, plan and write effective and competitive proposals. The course provides theoretical and practical knowledge about persuasive writing, the proposal submission and review process, building effective relationships with funders and how to proceed after post-funding decisions (positive or negative). Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5120 - Nonprofits and Public Policy**

Examines the intersection of public policy and the nonprofit world and the ways in which each affects the other. The course examines current policy issues that relate to the nonprofit sector such as conversion of nonprofit to for-profit status, regulation of the nonprofit sector, issues of financial management, the role of nonprofits in devolution and privatization of government services, tax exemptions, "charitable choice," donor control, governance and the future of the future of the sector. The course examines the ways nonprofits have affected the policy process and public policies by exploring the factors that shape social movements, nonprofit advocacy, strategies of influence, and the role of nonprofits in social movements such as Civil Rights and the environment. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5125 - Civil Society and Nongovernmental Organizations**

This course is designed for students interested in the international nonprofit sector. The course compares non-Western forms of civil society with the American tradition of civil society. Students will learn about the efforts of Nongovernmental Organizations (NGOs) working in Third World countries to influence democracy, free association, and/or increased political and societal pluralism. Additionally, the course will focus on NGO management and governance issues in countries where there are strict controls and limits on the activities of NGOs. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5130 - Collaboration Across Sectors**

The blurring of the three economic sectors - government, business and nonprofits-- continues to increase as more partnerships are developed across sectors. This course focuses on collaboration and partnerships involving public, nonprofit and for-profit organizations. Additionally, students are expected to gain an understanding of the issues and policies associated with the bidding, contracting, program delivery and reporting processes when nonprofit organizations are contracted to achieve public sector goals and/or private sector objectives. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5140 - Nonprofit Financial Management**



Provides a grounding in financial management for the "non-accountant" by focusing on an array of knowledge and management skill areas necessary for allocating and controlling resources and for analyzing, reporting and protecting the fiscal health of the organization. Topics include key accounting principles, understanding and using financial statements, the budget development process, cash flow analysis, banking relationships, using the audit report, maximizing investment policy and strategy, and understanding the boundaries of tax exemption. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 4140 and CRJU 5140. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5145 - Philanthropy**

Today, the organized field of philanthropy and its companion field, impact investing, are growing at a remarkable speed. This course will explore the origins of philanthropy and impact investing and provide students with an in-depth understanding of how philanthropy works today and the nuances that exist among different forms of philanthropy and investment: individual giving, foundations, corporate philanthropy, and impact investing. It will also explore new trends among individual and institutional investors and unpack the different approaches that funders are taking to influence how services are delivered and the striking efforts to affect systems changes. Cross-listed with PUAD 4145. Max hours: 3 credits **Semester Hours:** 3 to 3

### **PUAD 5150 - Fundraising & Financial Resource Development**

Designed to provide a comprehensive overview of funding sources available to nonprofit organizations (e.g., foundation and governmental grants, individual and corporate donations, entrepreneurial sources of revenue and events.), as well as detailed information on how to secure support of the various sources presented. Additionally, students are expected to gain both theoretical and practical knowledge relevant to why it is important to diversify an organization's revenue streams. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5160 - Nonprofit Boards and Executive Leadership**

The important roles and responsibilities of a voluntary board of directors and the process of governing are often misunderstood. This course explores the special powers of a nonprofit board of directors as framed by and responsive to public policy. From the perspective of organizational behavior and theory, the course examines the leadership role and interplay between board members and the executive director. The examination includes a comparative analysis of different governing models, and explores fundamental questions of board composition, the role of advisor boards, achieving effective board meetings, the realm of liability, using committees, and the board's role in fundraising, among other special subject matter. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5170 - Strategic Management for Nonprofit and Public Managers**

Designed to train public and nonprofit managers in the effective use of strategic management tools and techniques traditionally used by corporations. Strategic management tools and skills, although traditionally used by business, should not be seen as the exclusive domain of corporations. The course teaches students how to adapt traditional strategic management capabilities to the particular conditions of public and nonprofit organizations. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5180 - Social Entrepreneurship**

Designed to introduce students to the concept of social entrepreneurship. Using nonprofit (and public) organizational examples, students gain an understanding of what it means to be an innovative manager. Students study techniques designed to advance an organization's mission and increase organizational effectiveness, accountability and efficiency through the use of for-profit techniques within a nonprofit context. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5200 - Education Policy**

This course provides a broad overview of the history, purposes, and structure of public education in the United States, including topics such as education systems and governance, institutional actors, funding, education reform trends, and policy implementation and outcomes. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5220 - Human Resource Management**

Covers human resource functions in public and nonprofit agencies. Topics include job analysis, compensation, recruiting, selection, rewarding, training and development. Contemporary issues concerning civil service reforms are also presented. Cross-listed with PUAD 4220. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5250 - Intergovernmental Management**

Surveys the basic literature of intergovernmental management and examines the interactive role of managers at federal, state, and local levels of government. Emphasis is placed on current intergovernmental issues. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5260 - Managing Diversity**

Using a systems approach, diversity within organizations is examined through the construction and review of theories in private, public, and nonprofit organizations. Existing models of managing diversity are examined and analyzed. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5271 - Managing Conflict and Change**

Explores the process of change in organizations, communities, society, and conflicts that arise. Through the use of relevant case studies and role playing exercises, students are provided a practical framework for looking at change and managing conflict associated with change. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5280 - American Public Service Environment**

The American Public Service Environment. This course, intended for students from cultures outside the United States and for whom English is a second language, introduces students to public service professionals working at area government and nonprofit organizations. Students learn about the American system of government, American political and cultural values, and the workplace context for public service in America. Through interactions with public service professionals and course assignments, students improve their language skills as well as their knowledge about government and civil society in America. Restriction: This course is restricted to International students enrolled in the International MPA (IMPA program). Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5290 - Comparative Public Administration for International Students**

This year-long course provides mid-career international students with individualized attention as they actively compare and contrast American public administration with that of their home countries, develop their own organizational and personal leadership skills, and prepare to implement lessons learned in the U.S. in their own cultural and professional context. Restriction: Restricted to International students enrolled in the International MPA (IMPA) program only. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **PUAD 5310 - Policy Formulation & Implementation**

Building on PUAD 5005, students learn how policy is developed and implemented in several levels of government - local, state, federal - and within organizations themselves. The course makes use of the case studies to explore the intricacies of developing and implementing policy and the political, economic, and institutional contexts that affect these two states of policy development. Students also consider the different criteria that can be used to judge the effectiveness of programs and policies. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5320 - Public Policy Analysis**

Provides training in the systematic analysis of policy and program initiatives using an economics orientation and employing a case method. The course covers benefit-cost analysis, cost-effectiveness analysis, present values, and the treatment of multiple criteria in public sector program analysis. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5325 - Public Private Partnerships**

This course has been designed to introduce students to public private partnerships (PPPs) as a field of study and practice using Colorado as a laboratory for current practice, policy, strategy, management and finance. Students will engage current examples of PPPs as cases, learn and exchange in class presentations with guest lecturers currently leading PPPs and evaluate projects in class assignments doing research, analysis, and field interviews. Students will enhance their knowledge as well as skills commonly used in public, private, nonprofit and enterprise management and the public policy context and narrative of PPPs in international and U.S. practice. Cross-listed with PUAD 4325. Max hours: 3 credits **Semester Hours:** 3 to 3

### **PUAD 5330 - Intermediate Statistical Analysis**

Follows PUAD 5003/7003 and is focused on more advanced statistical techniques to be used in research. These techniques include the use of regression in time series analysis; binary response; nonlinear, logistic, and profit models; and factor and path analysis. Evaluating potential problems with model specification and the remedies are included. Students are required to test hypotheses using these models with a data set. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 7330. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5350 - Program Evaluation**

Describes the theory and methodology for the design of social research and demonstration projects and the application of analytic and statistical methods for evaluating public programs. Focus is on the application of evaluation methods and techniques of data interpretation. Report preparation is emphasized. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5361 - Capstone Seminar**

Synthesizes competencies gained throughout the course of study into a client-based research project. Students conduct independent research, complete a final written project demonstrating their qualifications and expertise, and orally present findings to a committee of faculty and public administration professionals. Prereq: PUAD 5001, 5002, 5003, 5004 or 5503,

5005 and 5006 and 5008 with a B- or higher. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5370 - Media and Public Policy**

Explores the conventions and practices of the print and electronic media in the United States. The course enables students to better understand the place of the media in society, the way the media look at themselves and how journalists confront conflicting values in the performance of their roles. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5380 - Citizen Participation: Theory and Practice**

Tackles the issues of citizen participation and community involvement in theory and practice. Students work in class on understanding the theoretical foundations that are relevant to citizen participation. Students engage in significant out-of-class projects to ground them in the practice of public involvement. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5410 - Administrative Law**

Examines legal aspects of policy implementation particularly the relationship between courts and administrative agencies. Covers standards of judicial review and agency action; administrative procedure and due process; selected special topics such as rights, liabilities, and immunities of public employees; and administrative discretion and scientific uncertainty. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5420 - Law and Public Policy**

Examines the relationship between courts and legislative assemblies. Explores how legislators use the policy process to shape and influence the exercise of judicial authority, and how the courts affect the policy process in reviewing the constitutionality of state and federal legislation. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5440 - Negotiation and Conflict Resolution**

Focuses on concepts and skills necessary to negotiate policy and management decisions and manage internal and external conflicts. Designed to help students understand the dynamics that affect negotiations and to apply the principles and strategies of negotiation in a variety of decision making and dispute resolution contexts. Cross-listed with PUAD 4440. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5455 - Environmental and All-Hazards Management Law**

Conveys knowledge of the statutes, regulations, administrative law, and court decisions governing the management of hazards, natural resources, and environmental protection, with a focus on the risk and liability that individuals and organizations face in these areas of law. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5455. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5460 - Political Advocacy**

Addresses advocacy & lobbying issues of public policy & govt problems. Special attention is given to how advocacy process works in the public sector & policy making bodies & how lobbying techniques & processes can be understood. General focus on practical applications at all levels of govt with primary attention to state & local govt. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5501 - Contemporary Issues in Revenue and Tax Administration and Policy**

This course provides a contemporary evaluation of Colorado's tax structure, revenue system, and the state budget. The interaction of politics, the initiative process, the State Constitution, and stakeholders is studied. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5502 - Public Financial Management and Policy**

Provides basic understanding of issues & tools relevant to financial mgmt of public & non-profit org, including managerial acct (managing resources & obligations, investing idle funds, reporting, financial statement analysis, overview of budgeting, revenue forecasting, & costing) & debt management. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5503 - Public Budgeting and Finance**

Covers concepts to manage the fiscal purse, prioritize resources, use financial documentation, and analyze fiscal data. Includes budget policy, content, format, processes, performance management, forecasting, inflation adjustment, time value of money, cost analysis, financial condition analysis, and spreadsheet competency. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5540 - Organization Development**

Studies the dynamics involved in managing and facilitating change in organizations by application of behavioral science knowledge. Emphasis is placed on both cognitive and experiential learning. A background in organization theory and administrative behavior is required. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5615 - Health Policy**

Draws upon existing policy models and evaluates the status of health policy formulation and implementation. Health policy topics include Medicaid and Medicare, managed care, health care reform proposals, telemedicine, the non-profit and for-profit role in health. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5625 - Local Government Management**

Relates the systems, processes, and principles of public management to the local government environment. Public management concepts such as strategic planning, bureaucracy, formal and informal organizational structures, human resource planning, management control, systems theory, and administrative behavior are explored within the context of local government. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5626 - Local Government Politics and Policy**

Examines local government from the perspective of politics and public policy making. The course focuses on local government political structures, policy analysis and formulation, political forces in administrative decision making, and the relationships between professional administrators and elected officials. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5628 - Social Problems and Policies**

Examines local government and nonprofit approaches to addressing common urban social problems. Topics covered may include urban poverty, crime, education, housing, and immigration. Cross-listed with URPL 6449. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5630 - Economic Development**

As governments search for new ways to be efficient, improve performance and leverage resources, they are also looking at their communities, states and regions in terms of competitiveness, international trade and globalization innovation, collaboration and partnerships. This course will look at practices where economic development includes these

elements: the Colorado Innovation Network, the Colorado Office of Economic Development and International Trade, the Metro Denver and Denver South Economic Development Partnerships, Mile High Connects, the Downtown Denver Partnership, and public-private partnerships across multiple sectors in transportation, broadband, water and innovation. Students will develop an economic development strategy based on knowledge and tools learned in the course. Political and professional leadership will be part of the dialog. Crosslisted with PUAD 4630. Max hours: 3 credits **Semester Hours:** 3 to 3

### **PUAD 5631 - Seminar in Environmental Politics and Policy**

Examines the fundamental principles of politics and policy that shape strategies of environmental protection. Focuses on the role of institutional processes, government organizations and nongovernmental organizations in environmental politics and policy. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5632 - Seminar in Environmental Management**

Examines the practical challenges facing environmental managers today, using a series of case studies. Focuses on the role of institutional processes, government organizations and nongovernmental organizations in the practice of environmental management. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5638 - Colorado Politics, Policy, and Administration**

This course focuses on the state-level policy-making process in Colorado, and how that process is affected by local, state, and federal politics, administration, and other policy-making constraints applicable to the state. Substantive topics covered will vary, but students will be exposed to a wide range of perspectives and experiences from practitioners and policy influencers engaged in state-level politics, policy-making, and administration. Cross-listed with PUAD 4638. Restriction: Restricted to Graduate level and Non-Degree Graduate students only. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5644 - Environmental and Hazards Law**

This course provides a broad overview of issues in all hazards management as well as natural resource and environmental health law. It will convey knowledge of the statutes, regulations and court decisions governing the management of hazards by governmental agencies. The course will also cover aspects of environmental policy implementation and enforcement including the legal aspects of natural resource allocation and management and environmental protection. Cross-listed with CRJU 5644. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3



## **PUAD 5650 - Public Service in Emergency Management and Homeland Security**

Introduces emergency management and homeland security including: management of hazards, emergencies, disasters, and the networks of government and nonprofit organizations providing services. Focuses on principles of emergency management and homeland security at state and local jurisdictional levels. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 4010, CRJU 4010, and CRJU 5650. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 5655 - Principles of Emergency Management**

Introduces the discipline and practice of emergency management. Topics include administrative practice and processes by which public policy shapes governmental responses to hazards, emergencies, and disasters. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5655, CRJU 4012, and PUAD 4012. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 5710 - Public Sector Technology**

This course addresses the impact and current use of technology in the modern government and nonprofit sector environments, including implications for interacting with citizens and organizational stakeholders, organizational decision-making and communication, and core functions such as budgeting and human resources. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 5720 - Public Policies for Hazards and Disasters**

Examines public policymaking and administration related to homeland security and disasters in the United States, including the interplay between security and traditional hazards management concerns. Assesses the role of institutional processes, governmental and nongovernmental organizations in policy development and implementation. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5720. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **PUAD 5740 - Sustainable Energy Policy**

This course will cover the basic principles and operation of policy and regulation that impact the production and use of energy (with a focus on transportation and electricity generation) from all of the major sources currently available and used. We will analyze (and, through a sustainability lens, critically evaluate) energy from water (hydroelectric, hydrokinetic), coal, domestic and international petroleum, natural gas and nuclear reactors. A significant portion of the course will focus on electricity generation and associated policy, technologies and regulation. In the context of each energy source and use, we will review and discuss

sustainability practices, policies, and, issues. Cross-listed with PUAD 5740. Max hours: 3 credits  
**Semester Hours:** 3 to 3

### **PUAD 5910 - Nature and Scope of Interpersonal Violence**

Analyzes the social, historical, political, legal, and psychological aspects of gender-based violence. Topics include definitions of the problem, demographics, children and youth exposure, and national and global perspectives. Strategies for prevention, intervention, treatment, and social change are explored. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5910. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **PUAD 5920 - The Psychology of Interpersonal Violence**

Addresses the contributions and limitations of current empirical and clinical psychological literatures on interpersonal violence (IPV). Special attention is paid to the effects of IPV on adult and child survivors, their psychological needs, and the contribution of psychological knowledge to understanding and addressing the problem of IPV. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5920. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5930 - Interpersonal Violence Law and Policy**

Examines public policy and law related to interpersonal violence (e.g., welfare reform, child maltreatment, criminal and civil court responses). Topics include the role of law enforcement agents, victim advocacy, and methods to change law and policy. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5930. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5940 - Interpersonal Violence Leadership, Advocacy, and Social Change**

Examines different models of social change and various approaches to public address, including social movements and campaigns. Strategies for engaging diverse individuals, systems and communities to address interpersonal violence will be emphasized. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5940. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5960 - Interpersonal Violence and Health Care**

Provides students with the knowledge and skills necessary for responding to the health care needs of patients experiencing interpersonal violence (IPV). Also explores how healthcare professionals can develop public & institutional discourses that transform healthcare policies & systems to address the health needs of IPV survivors. Restrictions: Restricted to Graduate and

Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 5961 - Interpersonal Violence, Health Advocacy and Systems Change**

Explores how healthcare professionals can develop successful public & institutional discourses that transform healthcare policies & systems to address the health needs of patients experiencing interpersonal violence. Methods of advocacy, activism & organizational change that produce positive results including effective educ techniques. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 6600 - Special Topics: Public Administration**

Studies special topics relevant to public administration, such as public/private sector partnerships, community participation, international development, conflict management, regionalism, managing economic options for Colorado, and nonprofit management and marketing. Each semester various topics are studied. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max hours: 15 Credits. **Semester Hours:** 1 to 6

### **PUAD 6650 - Professional Topics in Public Service**

This series of elective courses delivers just-in-time professional skills and topical content relevant to the needs of today's public service workforce. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **PUAD 6700 - Community-Based Field Experience and Seminar**

Students work in small groups to complete substantive projects for government agencies and community organizations, led by faculty instructor. Topics addressed will vary depending on the needs of the community partner. Prerequisite: Completion of PUAD 5003 and permission of instructor. Restriction: Restricted to SPA graduate students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 6840 - Independent Study: PUAD**

Affords students the opportunity to do independent, creative work. Prereq: Permission of instructor. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **PUAD 6910 - Internship**

For students who have not had government experience. Studies and reports are made while students have full- or part-time administrative traineeships, internships, or similar positions in government agencies or government-related organizations. Prereq: Completion of the common core courses. It is recommended that at least three of the track courses also be completed. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **PUAD 6950 - Master's Thesis**

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max hours: 6 Credits. **Semester Hours:** 3 to 6

### **PUAD 7007 - Qualitative Research Methods**

Focuses on qualitative research methods that incorporate field work techniques such as observation, interviews, and content analysis. The main objective is to discover practicalities and limitations of ethnographic methods with a comparative methodology perspective. Students are required to conduct a search project. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Cross-listed with PUAD 5007. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 7010 - Advanced Seminar in International Public Policy**

Explores advanced approaches and techniques in the study of public policy from international perspectives. The course includes lectures, student research presentations, and discussions with international public policy scholars. The course also includes public policy readings and writing assignments tailored to the student interests and needs. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 8010 - Historical and Comparative Foundations of Public Administration**

A doctoral seminar on developments and changes in public administration as a field of study. It examines how theory and practice have evolved and how the field is defined, studied and taught. It must normally be taken during the first full semester of the doctoral program. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 8020 - Seminar in Public Management**

An in-depth examination of contemporary literature, concepts, and theories of public management. Current issues and research problems are emphasized to prepare students for their advanced research. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 8030 - Seminar in Public Policy**

Offers an in-depth examination of contemporary literature, concepts, and theories of public policy, with an emphasis on policy process. Current issues and research problems are emphasized to prepare students for their advanced research. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 8040 - Seminar In Economic and Institutional Foundations of Public Affairs**

Offers an in-depth examination of the economic and institutional foundations of public affairs, with an emphasis on the evolution of theory and research in these fields. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 8050 - Quantitative Methods I**

Introduces foundational principles & techniques of quantitative analysis in social sciences generally & in public affairs specifically, incl statistical inference, regression analysis, other related estimation techniques, & commonly-used statistical software packages. Students should have taken master level stats course w/in last 3 yrs. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 8060 - Seminar On The Conduct Of Empirical Inquiry**

Introduces basic elements of research design in the social sciences, focusing on the relationship between theories and methods, concept development and measurement, selection of observations or cases, and alternative methods of data collection and analysis. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 8070 - Quantitative Methods II**

Moves beyond basic linear regression techniques by covering advanced analytic methods for improved causal inference. Students will also be introduced to data management skills and techniques for using longitudinal data. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PUAD 8840 - Independent Study: PUAD**

(Doctoral level) Affords students the opportunity to do independent, creative work. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

## **PUAD 8990 - Doctoral Dissertation**

Once students are admitted to candidacy, they must be continuously registered for dissertation credit each fall and spring semester or be automatically dropped from the program. Students must register for 5 credit hours per semester. In cases where students will not be using any university resources during a particular semester, they may petition the Ph.D. director to register for fewer semester credit hours. Students must be registered for dissertation credit during the semester they have a colloquium or defense. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Repeatable. Max hours: 30 Credits. **Semester Hours:** 1 to 10

## **Public Health**

### **PBHL 1001 - Race, Gender, Class, & Health**

Course focuses on the principles, tools, and population approach of social epidemiology as it relates health to race, gender, and class. Contemporary topics in public health will be used as case studies to illuminate principles and tools both in lecture and in recitation sections. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PBHL 2001 - Introduction To Public Health**

An overview of the discipline and practice of public health. Includes the history of the field, its population perspective, emphasis on prevention, tools and techniques. General principles of the field are illustrated through contemporary public health case studies. Term offered: fall, spring. Max hours: 4 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS3. **Semester Hours:** 4 to 4

### **PBHL 2052 - Global Demography and Health**

This course examines current issues in population growth, fertility, mortality and migration throughout the globe; introduces basic demographic tools; encourages critical thinking about the causes and consequences of population change. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PBHL 3001 - Introduction to Epidemiology**

Introduces the basic concepts of public health and epidemiology, including assessment of disease in the community, the study of causation and association of disease with lifestyle and environmental risk factors, as well as related special topics. We recommend coursework in college algebra or higher as preparation for this class. We have found that students who take this class before completing their math requirements are at a distinct disadvantage in this course, which is math-intensive. Therefore a grade of C or higher in MATH 1110 or equivalent is

strongly recommended. Term offered: fall, spring. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **PBHL 3010 - Human Sexuality and Public Health**

The focus of this course is on human sexuality using a public health lens, examining a number of sexual health issues and their relationship to individual, familial, organizational, and social-level influences. Additionally, we will focus on identifying both primary prevention and intervention approaches to reducing sexual risk factors and increasing healthy behaviors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PBHL 3020 - Introduction to Environmental Health**

This introductory survey course focuses on the human health implications of environmental exposures. Topics include pathways of exposure, toxicology, risk assessment, regulations, and policy development. Additionally, environmental equity, ethics, globalization, international perspectives, climate change, sustainability, and activism are considered. Prereq: PBHL 2000 or 2001 with a C- or higher. Note: Students will not earn credit for this course if they have already earned credit for PBHL 2020. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PBHL 3030 - Health Policy**

Health policies may have a profound effect on quality of life. Accessibility, cost, quality of health care; safety of food, water, and environment; the right to make decisions about our health; these issues are vitally tied to health policies. This course provides a framework for understanding the social, political and economic dimensions of health policy. Prereq: PBHL 2000 or 2001 with a C- or higher. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PBHL 3031 - Health, Human Biology and Behavior**

Introduces the multi-factorial nature of human health and well-being. Considers the influences of biology (genetics), behavior, environment, culture and social determinants, and health policy on the nature of disease and health problems from an integrated perspective. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PBHL 3041 - Health, Culture and Society**

Examines health and illness for individuals, families, and societies from multiple international perspectives, focused on topics such as traditional vs. Western medicine, characteristics of healers and therapeutic relationships, and stigmatized segments of society and their health status. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PBHL 3051 - Mental Illness and Society**

This course takes a social and public health--as opposed to medical, biological or psychiatric--approach to understanding mental disorder and society. Course addresses historical definitions of mental illness, social patterns of mental disorder and treatment and experience of mental illness patients, focusing on the U.S. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PBHL 3070 - Perspectives in Global Health**

Avian flu, disaster relief, aging populations and primary health care are key issues in a world where diseases cross borders rapidly, but health care resources may not. Examines improvements in global health, growing inequalities and social justice in health. Prereq: PBHL 2000 or 2001 with a C- or higher. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PBHL 3939 - Internship**

Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: Students must have junior standing and at least a 2.75 GPA and must work with Experiential Learning Center advising to complete a course contract and gain approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **PBHL 4021 - Community Health Assessment**

Introduces applied methods of public health, including: analyzing community-level assessment data, developing a casual model for selected health outcomes, maximizing community participation in the assessment process, developing assessments as a team, and setting the stage for effective intervention and evaluation. Prereq: Upper division standing, a course in statistics, and an introductory course in epidemiology (HBSC 4001, 5001). Cross-listed with HBSC 5021. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PBHL 4040 - Social Determinants of Health**

This course explores social inequalities in physical and mental health, the illness experience, the healing professions, health policy, relations between providers and patients, and the structure, access to, and financing of health care organizations, with some cross-national discussions. Prereq: PBHL 2000 or 2001 with a C- or higher. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PBHL 4099 - Capstone Experience in Public Health**

Offers students the opportunity to integrate, synthesize and apply concepts learned throughout the core curriculum of the public health major to real-world issues. The course involves



extensive writing and small group presentations on the epidemiological, global, social, environmental, and policy dimensions of current problems in public health. Prereq/Co-req: PBHL 2000 or 2001 and all or all but one of PBHL 2020 or 3020, PBHL 3001, PBHL 3030, PBHL 3070, PBHL 4040 with a C- or better. Students must enroll in that remaining course concurrently with PBHL 4099. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PBHL 4200 - The Global HIV/AIDS Epidemic**

Provides a foundation for a critical analysis of HIV/AIDS in global context, concerning topics such as disease, the body, ethnicity/race, gender, sexuality, risk, addiction, power, and culture together with a set of ethnographic texts that explore the epidemic's impact. Cross-listed with HBSC 4200. Term offered: summer. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **PBHL 4840 - Independent Study**

This course requires active independent learning based upon a written curricular outline and agreement with faculty in Public Health who supervise the student's work throughout the semester. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Permission of instructor required. Term offered: fall, spring, summer. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 1 to 4

### **PBHL 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **Recording Arts**

### **MSRA 5000 - Introduction to Graduate Studies**

Surveys existing literature and research in science, technology, and pedagogy of recording arts. Extensive use of available resources in library, electronic and print, trade and scientific publications are explored. Use of computer applications for research and publication are developed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5001 - MSRA Research Seminar**

In preparation for their thesis/portfolio, students learn research techniques by: applying skills from MSRA 5000, learning research design, performing research, interpreting results, and writing. Students will discover opportunities to add to the body of audio literature and recording techniques. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5004 - Topics in Media Forensics**

Students learn theory and application through topical subjects designed to enhance theoretical and practical training in the analysis of forensic media. Emphasis will be placed on emerging technologies, methodological developments, and strengthening fundamental skills. These courses are repeatable for credit. Repeatable. Max Hours: 5 Credits. **Semester Hours:** 1 to 3

### **MSRA 5014 - Research Practices in Media Forensics**

An introduction to practical research techniques and forensic science periodicals provides students with a foundation for projects and reports in subsequent classes and for the research thesis. Library resources, research design, writing styles, and information technology will be discussed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5054 - Experiential Lab**

Students will understand laboratory procedures and the application of A/V technology in the field and in analysis through professional conferences and site visits to crime labs and government agencies. Students will respond to experiences regarding presentation, demonstration, and discussion components. Repeatable. Max Hours: 5 Credits. **Semester Hours:** 1 to 1

### **MSRA 5114 - Foundations in Media Forensics**

Students learn the foundational processes integral to forensic audio, video, and image analysis demonstrating knowledge through reading responses and documentation of procedures and methodology used in assigned projects. Topics include: media recording technology, analog/digital theory, multimedia compression, and equipment characterization. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5124 - Forensic Science and Litigation**

Critical analysis of legal precedent and court proceedings reveal to students the correlation between science and law in the litigation of forensic evidence. Assigned reading and research papers regarding evidence admissibility and scientific methodology will prepare students for evidence examination. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5134 - Computer Forensics**

Students explore computer forensics through guided projects and group discussion. An overview of computer hardware/software and characterization of storage media and file types will be covered through mock evidence examination documenting the search, seizure, and acquisition of forensic media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5144 - MATLAB Foundations**

An introduction to MATLAB workflow and its use in Media Forensics will be explored. Students will learn how to build program commands in scripts for signal analysis and to display graphical representations of data and statistics. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **MSRA 5214 - Forensic Audio Analysis**

Students learn concepts through the application of techniques related to audio enhancement, digital media authentication, acoustic analysis, and automatic speaker recognition. The acquisition and analysis of digital evidence applying reliable methods prepares students for forensic audio analysis in the laboratory. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5224 - Forensic Video and Image Analysis**

Students learn concepts through the application of techniques related to forensic video collection and image enhancement, authentication, photogrammetry, and comparison. The acquisition and analysis of digital evidence applying reliable methods prepares students for working on forensic imagery in the laboratory. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5244 - Mobile Phone Forensics**

Students learn concepts regarding the proper handling of mobile phones to ensure evidence integrity and approaches to address the ever-changing field. Students are prepared for the acquisition and analysis of forensic media on personal devices through exercises and group projects. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **MSRA 5254 - MATLAB for Forensic Audio Analysis**

Advanced application of MATLAB for the forensic analysis of audio will be presented including file access, FFT and waveform plotting, and signal detection. Through the exploration of correlation and using mean quadratic difference students will be prepared for media authentication. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **MSRA 5264 - MATLAB for Forensic Video and Image Analysis**

Advanced application of MATLAB for the forensic analysis of images will be presented covering image processing and analysis techniques. Through exploring analyses such as Photo Response

Non-Uniformity and the BI-Dimensional DFT, students are prepared for image authenticity examinations. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **MSRA 5314 - Report Writing and Court Testimony**

Students are prepared for expert witness testimony through the analysis of mock evidence, complimentary report preparation, and subsequent mock trial. This capstone experience will demonstrate a student's technical writing and presentation skills and exercise the creation of demonstrative materials. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5500 - Topics in Professional Audio**

Selected topical subjects to include live or studio sound recording, sound reinforcement, new technologies or practices in the audio industry. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 1

### **MSRA 5505 - Introduction to Audio Post Production**

Reviews all aspects of audio synchronized with picture, including music, sound effects, narration, and dialog replacement. Topics studied with respect to film, video and multi-media. Cross-listed with MUSC 3505. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5510 - Topics in Recording Arts**

Selected topical subjects to include live or studio sound recording, sound reinforcement, new technologies or practices in the audio industry. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5515 - History of 20th Century Film Music**

This survey of the history of 20th century music in film will acquaint aspiring filmmakers and musicians with a history of the music, as well as concepts of film theory and the creative use of film music. Restricted to RCDA-MS majors within the College of Arts and Media. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5525 - Multimodal Interaction for Music**

This course explores human-computer interaction in music composition and performance. Students will learn to program and use open-source hardware to build novel and creative musical interfaces and instruments. Restriction: Restricted to Graduate Students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5530 - Live Sound Reinforcement**

This course focuses on the basic elements of sound reinforcement: acoustics, equalization, equipment and mixing techniques. The major emphasis is the production of the final sonic product. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5535 - Sound Effects & Foley for Visual Media**

Techniques for recording sound effects in the field and recording Foley in the studio. Use of library effects. Use of mixing techniques and plug-ins to create more complex sounds. Cross-listed with MUSC 4535. Prereq: MSRA 5505. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5545 - Music Editing in Visual Media**

Music editing for film and television. Spotting notes, temp tracks, cue sheets, scoring session management, dubbing stage fixes, and Performing Rights Artists notes. Cross-listed with MUSC 3545. Prereq: MSRA 5505. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5550 - Audio Production III**

Advanced studies in sound recording and reinforcement, aesthetics and techniques of multi-track analog and digital recording and stereo imaging. Team lab recording projects. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5555 - Dialogue Editing & Mixing for Visual Media**

Dialogue editing and mixing for film and television. Recording Voiceover, Automated Dialogue Replacement, Group ADR, Efforts. Noise-reduction, mix levels, compression, limiting, EQ and use of reflected sound. Cross-listed with MUSC 3555. Prerequisite: MSRA 5505. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5560 - Mastering & Advanced Digital Audio**

A study and practice of the art of mastering. Topics covered include: history, monitoring, signal flow, metering, jitter, audio restoration, limiting, creating a CD pre-master, & mastering for new media. Students will get practical experience mastering their own projects. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5565 - Re-recording Mixing for Visual Media**

Techniques for mixing dialogue, ADR, music, sound effects, background ambiances and Foley. Different level standards and deliverables. Cross-listed with MUSC 4545. Prereq: MSRA 5535 or MSRA 5555. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5575 - Graduate Surround Sound**

This lecture-lab course deals with surround sound in film, digital TV and DVD's. Topics include monitoring, microphone techniques, recording, mixing, mastering, delivery formats and psychoacoustics. Students work on two lab projects in the semester. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MSRA 5576 - Surround Sound II**

Students will work on advanced surround sound projects and study mixing aesthetics, high-definition technology and authoring. Students will have advanced knowledge of these topics and produce professional, competitive material for their demo. Prereq: MSRA 5550, 5575 and 5505, or permission of instructor. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **MSRA 5580 - Graduate Audio Seminar I**

Faculty and majors of the music engineering program assemble to discuss and demonstrate issues of artistic and technical applications of recording technology. Student projects, faculty, and guest lectures provide topical focus. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **MSRA 5581 - Graduate Audio Seminar II**

Capstone project based course in which students complete professional quality projects in music production and/or post production. Students refine their engineering skills and develop new skills required for integration in the music industry such as portfolio design and resume development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 5590 - Graduate Audio Production**

Deals with advanced audio skills for music recording, including technical and artistic considerations. This is a required course for the MSRA degree. Max hours: 4 Credits. **Semester Hours:** 3 to 3

### **MSRA 5600 - Topics in Music**

Various topics relating to the study of music performance, music technology and music business. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **MSRA 5605 - Audio Post Production II**

Students will learn advanced Pro Tools techniques by designing, conceptualizing, and completing sound for a student film project. This interdisciplinary course prepares students for working relationships between Recording Arts, Film and Video areas and an entry level job in post production. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MSRA 5820 - Digital Music Techniques**

Studies the general principles and applications of digital music technology, emphasizing the function and operation of specific computer software. Topics include digital audio workstations, MIDI sequencers, digital signal processing programs, and distribution on optical discs and computer-based mediums. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MSRA 5840 - Independent Study for MSRA**

Allows graduate students to pursue in-depth study of an audio-related topic, to be discussed with and approved by the Graduate Advisor. A final report or other tangible results will be determined on a case- by-case basis. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

## **MSRA 6214 - Forensic Audio Analysis**

Students learn concepts through the application of techniques related to audio enhancement, digital media authentication, acoustic analysis, and automatic speaker recognition. The acquisition and analysis of digital evidence applying reliable methods prepares students for forensic audio analysis in the laboratory. Coreq: MSRA 6254 and admittance to Certification in Forensic Audio Analysis Program required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MSRA 6224 - Forensic Video and Image Analysis**

Students learn concepts through the application of techniques related to forensic video collection and image enhancement, authentication, photogrammetry, and comparison. The acquisition and analysis of digital evidence applying reliable methods prepares students for working on forensic imagery in the laboratory. Coreq: MSRA 6264 and admittance to Certification in Forensic Video and Image Analysis Program required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MSRA 6254 - MATLAB for Forensic Audio Analysis**

Advanced application of MATLAB for the forensic analysis of audio will be presented including file access, FFT and waveform plotting, and signal detection. Through the exploration of correlation and using mean quadratic difference students will be prepared for media authentication. Coreq: MSRA 6214 and admittance to Certification in Forensic Audio Analysis Program required. Max hours: 1 Credit. **Semester Hours:** 1 to 1

## **MSRA 6264 - MATLAB for Forensic Video and Image Analysis**

Advanced application of MATLAB for the forensic analysis of images will be presented covering image processing and analysis techniques. Through exploring analyses such as Photo Response Non-Uniformity and the Bi-Dimensional DFT, students are prepared for image authenticity

examinations. Coreq: MSRA 6224 and admittance to Certification in Forensic Video and Image Analysis Program required. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **MSRA 6510 - Graduate Audio Studies Pedagogy**

Surveys available resources for audio education. Interdisciplinary materials in physics, acoustics, engineering, music, broadcast, medicine, psychology, multi-media, theater, and film or video are reviewed. Emphasis on design and development of new methods and materials are pursued. (MSRA graduate students only.) Prereq: MUSC 5000. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MSRA 6550 - Sound Design**

Deals with designing sound for live theater, film, video, television, theme parks, games and soundscapes. Focuses on using technology to achieve specific esthetic aspects of audio production. This is accomplished through lectures, listening assignments, research and lab practice. (For graduate students only.) Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **MSRA 6950 - Thesis in Professional Audio**

With the guidance of a thesis advisor, each candidate for the MSRA degree select an approved topic for scholarly review, research and publication. The approved materials are evaluated for written and oral defense. Prereq: MUSC 5000, 5590, 6510, 6580, 6530. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **MSRA 6951 - Professional Audio Portfolio Thesis**

With the guidance of a portfolio advisor, each candidate for the MSRA degree produce specified documentation and audio materials that reflect the career intentions of the candidate. A completed "Show kit" or professional "Demo" of the candidate's specialty are produced. The approved materials are evaluated for written, audio and oral defense. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **MSRA 6954 - Research Thesis in Media Forensics**

Students work closely with their thesis advisor in selecting a topic for original research and scientific publication. This capstone project creates an area of specialty for MSRA-MF degree candidates. Approved materials are evaluated through report submission and oral defense. Max hours: 4 Credits. **Semester Hours:** 4 to 4

## **Religious Studies**

### **RLST 1610 - Introduction to Religious Studies**



Religion is a complex phenomenon which involves social norms, beliefs and fears, and overarching world view. Religious experiences are among the most profound an individual can have. The course examines religious phenomena from various perspectives, including philosophical, historical, psychological, anthropological, political, sociological, the symbolic and ritual. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-AH3 **Semester Hours: 3 to 3**

### **RLST 2660 - World Religions**

Provides an introduction to the basic beliefs and concepts of the world's great religious traditions. Covers the history, development, belief patterns, and institutional forms of the world's religions, including Judaism, Zoroastrianism, Christianity, Islam, Hinduism, Buddhism, Confucianism, Taoism and Shintoism. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-AH3 **Semester Hours: 3 to 3**

### **RLST 2700 - The Bible as Literature**

Introduces students to biblical literature. Selections from the various genres of writing in Hebrew (history, wisdom, prophecy, literature) are read and discussed, as well as representative sections from the New Testament, including the gospels and the writings of Paul. Cross-listed with ENGL 2520. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **RLST 3000 - Judaism, Christianity and Islam: Affinity and Difference**

Judaism, Christianity and Islam have much in common, beginning with their common patriarch Abraham. But there are also elements in each that are unrecognizable from the perspectives of the other two. This course will trace the relationships among the Children of Abraham across history and in today's turbulent world. Term offered: spring. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **RLST 3100 - Islamic Politics and Culture**

Comprehensive, in-depth study of Islam and Muslims. Islam is viewed as a "way of life" with social, economic, psychological, spiritual, and political implications. Among topics to be examined are: women in Islam, Jihad, fundamentalism, Islamic movements, Islam and the West. Cross-listed with PSCI 4165. Term offered: fall. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **RLST 3120 - Islamic Traditions**

Examines birth and history of Islam, its evolution from beginning to current trends and issues. Covers core beliefs, practices, differences between Sunni and Shi'a sects, and relationship to other Western religions. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 3300 - Shamanic Traditions**

Explores shamanic religious traditions across the world. This form of religion, involving spiritism, animism, trance states, and "mind power," is the oldest and most widespread religion in world history. Cross-listed with ETST 3300. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 3410 - Asian Philosophies and Religions**

We in the Western world encounter a vastly different world, a radically different "universe of meaning," when we examine the traditions of the East. Even what we tacitly assume to be "real" is claimed by the Hindus and Buddhists of India to be a grand illusion. The world of China is, again, very different from India. An examination of Tibetan and Japanese religious forms will conclude our study of Asian thought. Cross-listed with PHIL 3410. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 3486 - Renaissance and Reformation**

Explores the late 13th through middle 17th centuries when European art and culture changed dramatically, and when Europe was torn by explosive ideological conflicts and religious upheaval. Cross-listed with HIST 3486. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 3500 - Religions of India**

Examines the transcendentalist philosophy of India, which rests at the foundation of the great Eastern religious traditions of Hinduism and Buddhism. The Indian ideas of God, the soul, time, the nature of the universe, and its ultimate goal are examined. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 3660 - Chinese Philosophy and Culture**

China is a fascinating world with its own characteristic orientation to philosophical questions. Chinese thinkers produced the "Flowering of a Hundred Schools of Thought" in the Axial Age, the same period of time in which philosophy was coming to birth in ancient Greece. Covers some of the Chinese schools, including Confucianism, Taoism, Mohism, Legalism, Chinese "Logic," and the later schools of Neo-Confucianism, Neo-Taoism and Chinese Buddhism. Cross-listed with PHIL 3981. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 3720 - Religious Narratives**

Investigates the language and structure of religious discourse in Western literature. Welcomes interdisciplinary and comparative perspectives with a focus on cultural constructions of the sacred. Cross-listed with ENGL 3520. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 3740 - Biblical Traditions: Old Testament**

Investigates the history and nature of the Biblical text. Follows the tradition of critical scholarship beginning in the Enlightenment era and continued down to the present day, sometimes entitled "Secular Humanism." Topics include theories of authorship of the Torah, its general nature and content; the historical books of the Bible, the Prophets, and the Wisdom Literature. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 3760 - Biblical Studies: New Testament**

Examines the books of the New Testament from a scholarly, historical-critical perspective, which views it as a historically and culturally conditioned text, reflecting the beliefs and attitudes of the authors who produced it. The course covers the canonical gospels, letters, and other writings of the New Testament. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 3770 - Archaeological Discoveries Relating to the Bible**

Examines the revolutionary impact of archaeology on Biblical Studies. Among these discoveries are Egyptian, Mesopotamian, and Canaanite texts, the Dead Sea Scrolls, and the Gnostic texts. Through these investigations, the Bible will be placed in its appropriate historical, literary and cultural context. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 3800 - Spirituality and Ecology in Global Societies**

This course will examine the historical and contemporary attitudes and actions of religion in responding to the societal impacts of environmental concerns. We will investigate four worldviews in particular: indigenous traditions, Christianity, Judaism and Buddhism, and also consider how these traditions interact with public policy debates and their position on social justice and environmental issues. Religions both create and mitigate conflict. This course will consider ethical and moral approaches, philosophical principles and social movements including ecofeminism and ethics to provide tools for dialogue and critical thinking around ecological challenges. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4000 - Religion and Cultural Diversity**

Religion is one of the key elements which creates multiculturalism. This course explores issues in religion and religious identity in contemporary America, including Native American spiritual traditions, Jewish-American traditions, Muslim-American traditions, Asian-American traditions, the African-American Pentecostal movement, and the growth of the Black Muslim movement. Attention is also given to the question of gender issues, as the traditional model for gender

roles was formulated, in part, from a religious basis. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4020 - Sociology of Religion**

This course introduces students to the nature and functions of religion in society, emphasizing western religions in the U.S. Students will develop and apply an understanding of classic and modern sociological theories of religion to current events and disciplinary developments. Cross-listed with SOCY 4610, SOCY 5610, RLST 5020. Prereq: Junior or Senior standing or permission from instructor. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4030 - Race, Religion and Belonging in the United States**

Race/ethnicity and religion are conconstitutive social and cultural formations that have played a fundamental part in determining the boundaries of belonging of the United States. In this course, students will interrogate when, why and how race/ethnicity and religion have been used to delineate borders, determine citizenship, navigate legal classifications, dictate social mobility, and regulate economic possibilities. We will analyze both primary sources ?such as sermons, reality TV shows, court cases and graphic images?as well as scholarly writing to explore how formations of race and religion have shaped notions of belonging in the US nation?state, thereby constructing the boundaries of the state itself. Cross-listed with ETST 4030, ETST 5030, RLST 5030, HIST 4209 and HIST 5029. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4040 - Psychology of Religion**

Examines the theories developed by some of the great names in the field of psychology and their approaches to religion. Questions addressed include why people become religious, how religion functions in their lives, religious experience and assessment of the validity of religious claims. Key theorists studied include: William James, Sigmund Freud, Carl G. Jung, Abraham Maslow and Erich Fromm. Cross-listed with RLST 5040. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4060 - Philosophy of Religion**

Nature of religion and methods of studying it. Cross-listed with HUMN 5600, PHIL 4600, 5600, RLST 5060, and SSCI 5600. Term offered: summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4100 - Special Topics in Religion**

This special topics course allows for a variety of subjects to be explored in different semesters, including such issues as the nature of religious experience, communication with the divine, specific historical themes and events in religion. Term offered: spring. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **RLST 4160 - Mysticism**

Explores the mystical strains within the world's great religious traditions. Jewish, Christian, and Islamic mystics did not always express the same beliefs and attitudes as mainstream adherents. When mystics are placed side-by-side, amazing similarities appear. One cannot always tell whether a given mystical statement is Hindu, Jewish, Sufi, or Christian. This class examines these mystical traditions, East and West. Cross-listed with RLST 5160. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4300 - Myth and Symbol**

Approaches the field of classical Greek mythology and religion from the perspective of Jungian archetypal theory. The deities of the ancient Greeks are presented as archetypal patterns with universal correlates elsewhere in world religions. A foundation in C. G. Jung's archetypal theory will be offered to ground the course material. Cross-listed with RLST 5300. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4340 - The Hero's Journey**

The myth of the hero's journey serves as a metaphor for the vicissitudes life puts each of us through. The hero or her represents the ego-self who undertakes the journey--a grand adventure into the realm of the unknown--to seek the treasure. He or she is greatly transformed by the process, ultimately into the great self, who wins the boon to share with all humanity. Versions of the story are found all over the world, such as in the sagas of Gilgamesh, Odysseus, Psyche, King Arthur, Dorothy of Oz, and Luke Skywalker from a galaxy far, far, away. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4360 - Freudian and Jungian Perspectives in Dream Analysis**

Focuses on the phenomenon of dreams in a way that differs distinctly from the traditional approach to the subject in the field of psychology. "Spiritual" approaches to dreams are examined, as well as some major theorists on dreams, especially the work of Sigmund Freud and C. G. Jung. Cross-listed with RLST 5360. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4400 - Differing Concepts of God**

God, Gods, and Goddesses have been imagined in many different modes, forms, aspects, and guises throughout human history. This course investigates Paleolithic models of God, the Great

Goddess of the Neolithic era, the Gods of mythological traditions, Biblical God, the abstract God of the philosophers, the God of the pantheists, the deists, and the God of the mystics. Cross-listed with RLST 5400, PHIL 4650 and 5655. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4420 - Goddess Traditions**

Explores the many forms which Goddesses have assumed through history, including the Neolithic Great Mother and her heiresses in the ancient Mediterranean cultures, such as: Isis, Ishtar, Demeter, Hecate, Aphrodite, Artemis, Athena and others, and their parallels in India. Goddess traditions have encompassed a full spectrum from virgins to Great Mothers to dark underworld Goddesses of death and destruction. Cross-listed with RLST 5420 and WGST 4420/5420. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4440 - Concepts of the Soul**

Asks the questions: What is the nature of the human being? What makes us "human?" Do humans have a "soul?" What is its nature? Is it different from the "spirit?" What is its ultimate fate? Examines the various theories put forward by philosophers of both Eastern and Western traditions. Cross-listed with RLST 5440 and PHIL 4470, 5470. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4460 - Death and Concepts of Afterlife**

Examines how the major religious traditions approach the issue of death. Where the Egyptians were fascinated by death, their Mesopotamian and Hebrew neighbors saw no kind of experience continuing after death. Concepts of the Final Judgment Day and the end of the world follow in Zoroastrianism, Christianity, and Islam, while Indian religions developed a sophisticated theory of reincarnation and the "art of dying." Finally, we will turn to Chinese belief in ancestral spirits. Cross-listed with RLST 5460. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4462 - Islam in Modern History**

This course studies Islamic thought and practice over the last two centuries in terms of major historical processes that have operated at local, national, and global scales. Cross-listed with RLST 5462, HIST 4462, HIST 5462. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4480 - Perspectives on Good and Evil**

Examines "problem of evil" as formulated in the philosophical tradition. Presents classical formulation of the problem, traditional solutions & classical critiques of each answer. Considers perspectives of various religious orientations, which deal differently with the question of

suffering. Cross-listed with PHIL 4480/5480, RLST 5480. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4500 - Religion and Politics**

Exploration of: (1) theoretical perspectives on the relationship between religion and politics; (2) causes of and justifications for the historical development of the Western separation of "church and state;" (3) contemporary responses to and analyses of this separation; and (4) several current debates about public policy in America that reveal tensions between these two spheres. Cross-listed with PSCI 4057, 5057 and RLST 5500. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4730 - Whores and Saints: Medieval Women**

Studies how women are presented in texts, as well as works by women. Investigates the roles open to women and societal attitudes toward women, who were considered seductresses, saints, scholars and warriors in the middle ages. This course assumes that students have completed at least 9 hours of literature coursework. Cross-listed with ENGL 4510/5510, RLST 5730 and WGST 4510/5510. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4840 - Independent Study: RLST**

Various topics in religious studies pursued in independent research. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **RLST 4850 - Family Systems Therapy, Religion and Spirituality**

This course examines how the intersection between different religious and spiritual frameworks affects family systems. A strengths-based ecological perspective, family therapy theories and family systems theories will be used to understand religious and spiritual frameworks in working with families in schools and communities. Cross-listed with HDFR 4850. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for

approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours: 1 to 6**

### **RLST 5010 - Comparative Religious Systems**

A cross-cultural analysis of religious belief and behavior. Emphasis is placed on religions found among non-Western cultural groups and includes consideration of how major religions of the world are manifested on local levels. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ANTH 4130, 5130, RLST 4010. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **RLST 5020 - Sociology of Religion**

This course introduces students to the nature and functions of religion in society, emphasizing western religions in the U.S. Students will develop and apply an understanding of classic and modern sociological theories of religion to current events and disciplinary developments. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SOCY 4610, SOCY 5610, RLST 4020. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **RLST 5030 - Race, Religion and Belonging in the United States**

Race/ethnicity and religion are conconstitutive social and cultural formations that have played a fundamental part in determining the boundaries of belonging of the United States. In this course, students will interrogate when, why and how race/ethnicity and religion have been used to delineate borders, determine citizenship, navigate legal classifications, dictate social mobility, and regulate economic possibilities. We will analyze both primary sources ?such as sermons, reality TV shows, court cases and graphic images?as well as scholarly writing to explore how formations of race and religion have shaped notions of belonging in the US nation?state, thereby constructing the boundaries of the state itself. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ETST 4030, ETST 5030, RLST 4030, HIST 4209 and HIST 5029. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **RLST 5040 - Psychology of Religion**

Examines the theories developed by some of the great names in the field of psychology and their approaches to religion. Questions addressed include why people become religious, how religion functions in their lives, religious experience and assessment of the validity of religious claims. Key theorists studied include: William James, Sigmund Freud, Carl G. Jung, Abraham Maslow and Erich Fromm. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with RLST 4040. Term offered: spring. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **RLST 5060 - Philosophy of Religion**



Nature of religion and methods of studying it. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5600, PHIL 4600, 5600, RLST 4060, and SSCI 5600. Term offered: summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 5160 - Mysticism**

Explores the mystical strains within the world's great religious traditions. Jewish, Christian, and Islamic mystics did not always express the same beliefs and attitudes as mainstream adherents. When mystics are placed side-by-side, amazing similarities appear. One cannot always tell whether a given mystical statement is Hindu, Jewish, Sufi, or Christian. This class examines these mystical traditions, East and West. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with RLST 4160. Term offered: spring. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **RLST 5300 - Myth and Symbol**

Approaches the field of classical Greek mythology and religion from the perspective of Jungian archetypal theory. The deities of the ancient Greeks are presented as archetypal patterns with universal correlates elsewhere in world religions. A foundation in C. G. Jung's archetypal theory will be offered to ground the course material. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with RLST 4300. Term offered: spring. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

### **RLST 5360 - Freudian and Jungian Perspectives in Dream Analysis**

Focuses on the phenomenon of dreams in a way that differs distinctly from the traditional approach to the subject in the field of psychology. "Spiritual" approaches to dreams are examined, as well as some major theorists on dreams, especially the work of Sigmund Freud and C. G. Jung. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with RLST 4360. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 5400 - Differing Concepts of God**

God, Gods, and Goddesses have been imagined in many different modes, forms, aspects, and guises throughout human history. This course investigates Paleolithic models of God, the Great Goddess of the Neolithic era, the Gods of mythological traditions, Biblical God, the abstract God of the philosophers, the God of the pantheists, the deists, and the God of the mystics.

Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with RLST 4400, PHIL 4650 and 5655. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 5420 - Goddess Traditions**

Explores the many forms which Goddesses have assumed through history, including the Neolithic Great Mother and her heiresses in the ancient Mediterranean cultures, such as: Isis,

Ishtar, Demeter, Hecate, Aphrodite, Artemis, Athena and others, and their parallels in India. Goddess traditions have encompassed a full spectrum from virgins to Great Mothers to dark underworld Goddesses of death and destruction. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with RLST 4420 and WGST 4420/5420. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 5440 - Concepts of the Soul**

Asks the questions: What is the nature of the human being? What makes us "human?" Do humans have a "soul?" What is its nature? Is it different from the "spirit?" What is its ultimate fate? Examines the various theories put forward by philosophers of both Eastern and Western traditions. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with RLST 4440 and PHIL 4470, 5470. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 5460 - Death and Concepts of Afterlife**

Examines how the major religious traditions approach the issue of death. Where the Egyptians were fascinated by death, their Mesopotamian and Hebrew neighbors saw no kind of experience continuing after death. Concepts of the Final Judgment Day and the end of the world follow in Zoroastrianism, Christianity, and Islam, while Indian religions developed a sophisticated theory of reincarnation and the "art of dying." Finally, we will turn to Chinese belief in ancestral spirits. Restriction: Restricted to Graduate level students. Cross-listed with RLST 4460. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 5462 - Islam in Modern History**

This course studies Islamic thought and practice over the last two centuries in terms of major historical processes that have operated at local, national, and global scales. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with RLST 4462, HIST 4462, HIST 5462. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 5480 - Perspectives on Good and Evil**

Examines "problem of evil" as formulated in the philosophical tradition. Presents classical formulation of the problem, traditional solutions & classical critiques of each answer. Considers perspectives of various religious orientations, which deal differently with the question of suffering. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4480/5480, RLST 4480. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 5500 - Religion and Politics**

Exploration of: (1) theoretical perspectives on the relationship between religion and politics; (2) causes of and justifications for the historical development of the Western separation of "church and state;" (3) contemporary responses to and analyses of this separation; and (4) several current debates about public policy in America that reveal tensions between these two spheres. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PSCI 4057, 5057 and RLST 4500. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 5710 - Women and Religion**

A sociological exploration of the contemporary roles of women in religion. Course examines American and world religious groups with an eye to women's involvement. Considers how women have changed these traditions as they take on leadership roles and discusses the tensions that arise within these traditions as a result of their expanded participation.

Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5710, SSCI 4710/5710, WGST 4710/5710, RLST 4710. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 5730 - Whores and Saints: Medieval Women**

Studies how women are presented in texts, as well as works by women. Investigates the roles open to women and societal attitudes toward women, who were considered seductresses, saints, scholars and warriors in the middle ages. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ENGL 4510/5510, RLST 4730 and WGST 4510/5510. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RLST 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **Research & Eval Methods**

#### **RSEM 4001 - Special Topics**

Specific topics vary from semester to semester. Cross listed with RSEM 5001. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **RSEM 4100 - Research and Statistics in Families and Human Development**

This course will prepare students to read, critique, and conceptualize research on families and human development. Statistical concepts will be taught along with examination of statistical studies. The second half emphasizes qualitative studies employing ethnographic and case study methodologies. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RSEM 4120 - Introduction to Research Methods**

This is a survey course that examines the purposes of research, the methods of quantitative, qualitative, and mixed research, and the processes involved in research studies. The primary aims of this course are to improve your skills as an informed consumer of research and to provide you with the skills to conduct your own research. Cross-listed with RSEM 5120. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RSEM 5001 - Special Topics**

Specific topics vary from semester to semester. Cross listed with RSEM 4001. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RSEM 5050 - Classroom Assessment**

This course strengthens educator classroom assessment practice. It provides students with a foundational understanding of quality measurement practices to support evaluation of assessment instruments and tasks, determination of appropriate scoring approaches, and interpretation of state and district assessment results. It also deepens students' formative assessment practice supported by practical strategies and tools. Finally, it facilitates student integration of formative and summative uses of assessment with instruction and planning. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **RSEM 5080 - Research In Schools**

Provides teachers with the competencies necessary for examining their professional experiences using formal and informal methods of inquiry. Teachers become more reflective practitioners who investigate questions that arise from their work in schools. The course also prepares teachers to critique published research in a thoughtful manner. The intended audience for the course is beginning and experienced P-12 teachers. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **RSEM 5100 - Basic Statistics**

A first-level course on the use and interpretation of descriptive and inferential statistics. Topics covered include: frequency distributions, measures of central tendency and measures of variability; shapes of distributions; standard scores; scattergrams, correlation and regression; and t-tests. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

## **RSEM 5110 - Introduction to Measurement**

A first-level course that examines the nature and purpose of psychological measurement. Particular attention is paid to the concepts of reliability, validity, norms, interpretation of scores, response sets, fairness in testing, and norm-referenced vs. criterion-referenced interpretation of scores. A variety of instruments that are used to measure human attributes and behaviors are studied. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

## **RSEM 5120 - Introduction to Research Methods**

This is a survey course that examines the purposes of research, the methods of quantitative, qualitative, and mixed research, and the processes involved in research studies. The primary aims of this course are to improve your skills as an informed consumer of research and to provide you with the skills to conduct your own research. Cross-listed with RSEM 4120. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **RSEM 5600 - Issues in Assessment Development**

This is the first course of a three-course series for a Classroom Assessment Certificate. The course focuses on developing the conceptual knowledge and technical skills required to help K-12 practitioners to develop valid, reliable, and fair assessment of student learning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **RSEM 5610 - Formative and Summative Assessment in the Classroom**

This is the second course of a three-course series for a Classroom Assessment Certificate. The course focuses on developing conceptual knowledge and technical skills required to develop and implement formative and summative assessments to support student learning. Prereq: RSEM 5600. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **RSEM 5620 - Analyzing, Using, and Reporting Assessment Results**

This is the third course of a three-course series for a Classroom Assessment Certificate. The course focuses on developing conceptual knowledge and technical skills required to develop and implement formative and summative assessments to support student learning. Prereq: RSEM 5610. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **RSEM 5800 - Workshop: Topics in Research and Evaluation Methodology**

Topics and credit hours vary from term to term. Often workshops address a current topic in research, evaluation, or measurement by considering its scholarly foundations and its application to schools and other educational settings. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 4

### **RSEM 5840 - Independent Study: RSEM**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 4

### **RSEM 5910 - Practicum in Research and Evaluation Methodology**

Supervised work in projects that provide experience in data analysis, research, measurement, or evaluation. Requires a minimum of 75, 150, 225, or 300 clock hours under supervision (for 1, 2, 3, or 4 credit hours, respectively). Repeatable. Max Hours: 8 Credits. **Semester Hours:** 1 to 4

### **RSEM 6200 - Single Case Research Design for Education**

This course provides an overview of Single Case research Design (SCRD) within educational settings. The course will describe single case designs (SCD), specify the types of questions that SCD's are designed to answer, discuss the internal and external validity of SCD's, outline SCD standards, and describe implementation of different SCRD's. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RSEM 6500 - Teacher as Researcher**

Taken concurrently with Contextual Curriculum II, this course provides opportunities to engage in inquiry while analyzing professional experiences within their classroom context, sharing data/results from an action research project and critiquing and synthesizing published educational research. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **RSEM 6950 - Master's Thesis**

A master's thesis is part of the degree track options. Credit hours, topic, and workload are determined by the student's advisor. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 4

### **RSEM 7000 - Doctoral Seminar in Research Methods**

Designed for students beginning doctoral work, explores conceptual and practical bases for doing and evaluating educational research. The chain of reasoning linking the conceptualization of a research problem, the posing of questions in a social process of inquiry, and the collection and interpretation of evidence is examined through the use of examples. Restriction: Restricted to EDHDPHD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RSEM 7001 - Applied Research Methods I**

Introduces students to principles of quality research design, and provides a conceptual and hands-on procedural introduction to quantitative and qualitative methods common in education-related research. Takes an explicit focus on understanding and mitigating potential biases in research methods and design. Restriction: Restricted to LDRE-EDD students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RSEM 7002 - Applied Research Methods II**

Prepares students with conceptual knowledge and procedural skills of designing quality, applied research from critical and pragmatic perspectives. Focus on quantitative analysis methods, including survey and assessment item development. Students continue deeper review of extant literature for intended dissertation topic. Restriction: Restricted to LDRE-EDD students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RSEM 7003 - Applied Research Methods III**

Content will focus on qualitative data collection and analysis methods, and mixed methods design including program evaluation and improvement research. Students will work with faculty on development of dissertation in practice design. Restriction: Restricted to LDRE-EDD students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RSEM 7010 - Educational Assessment And Measurement**

This advanced course incorporates foundational knowledge and application of assessment and measurement tools in school settings. Foundational concepts are utilized to better understand student achievement and growth indicators, and inferences about school and educator effectiveness; survey measures are also addressed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RSEM 7050 - Methods of Survey Research**

Covers the purposes and methods of survey research. Topics included are: goals and uses of survey research, data collection methods, questionnaire and interview protocol design, reliability and validity of data collection methods, sampling, ways to reduce error in data collection and sampling, data analysis techniques commonly used in survey research studies, interpreting and reporting results, and ethical issues. Students design and conduct a survey as part of the course requirements. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **RSEM 7080 - Methods of Qualitative Inquiry**

Prepares graduate students to conduct field research employing qualitative methods and perspectives. Students become familiar with evolving theoretical and methodological perspectives in qualitative research drawn from anthropology, clinical psychology, sociology

and education. Students apply techniques of qualitative data collections and analysis in a pilot investigation. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **RSEM 7100 - Advanced Methods of Qualitative Inquiry**

An advanced seminar directed at individuals who have completed an introductory course in methods of qualitative research. Topics included are qualitative data collection, data analysis, and writing about data. Students collect and analyze data. Prereq: RSEM 7080. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RSEM 7110 - Intermediate Statistics**

Continuation of RSEM 5100, covering more advanced methods of analyzing data, with an emphasis on the use and interpretation of descriptive and inferential techniques. Topics covered are one-way and two-way analysis of variance; power; multiple comparisons; factorial designs and factorial ANOVA; partial correlation, multiple correlation and regression; analysis of covariance; and selected use of packaged statistical programs (SPSS). Prereq: RSEM 5100. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **RSEM 7120 - Advanced Methods in Quantitative Inquiry and Measurement**

Covers advanced topics in quantitative design and analysis, including advanced measurement topics. Topics include: specific types of design used in experimental, quasi-experimental, correlational, and survey research; multivariate ANOVA, ANCOVA and MRC; factor and trend analyses; classical test theory; and IRT approaches. Students analyze their own data using techniques presented in the course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **RSEM 7130 - Advanced Measurement using Item Response Theory**

This course will consider theory and methods for the educational and psychological measurement of latent variables using item response theory. Students will understand and be able to apply concepts from item response theory, specifically the Rasch model, to understand, evaluate, and construct measures. Recommended students have Introduction to Statistics and a survey design course. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RSEM 7140 - Management & Secondary Analysis of Large Datasets**

Large education, community, and health datasets are underutilized research resources, providing large samples and longitudinal data otherwise too costly and time-consuming to collect. Students will work in their discipline area to learn to access, manage, and appropriately analyze extant datasets. Prereq: RSEM 7110 Intermediate stats or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3



## **RSEM 7150 - Mixed Methods Research**

This seminar is directed at individuals who have completed both qualitative and quantitative research courses and are interested in combining these in the mixed-method approach. Focus will be on developing the skills and knowledge needed to formulate mixed-methodological research questions in which quantitative and qualitative data collection, analysis and interpretational techniques are utilized simultaneously or sequentially. Prereq: RSEM 6100 and RSEM 7110. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **RSEM 7200 - Ethnography**

This course is designed for persons interested in studying the phenomenon of learning in family and community contexts. The course blends foundational readings in the learning sciences and the ethnography of education with "participant-observation" fieldwork. The fundamentals of ethics regarding studies involving human persons, building relationships with study participants, becoming an "observant participant," writing field notes, and co-authoring meaning with study participants will be covered. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **RSEM 7210 - Program Evaluation in Schools**

This advanced course incorporates foundational knowledge and application of the topic of program evaluation as it applies to inquiry and decision making in schools and other educational settings. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **RSEM 7500 - Special Topics: Research and Evaluation Methods**

Specific topics vary from semester to semester. Restriction: Restricted to graduate level students. Repeatable. Max hours: 12 Credits. **Semester Hours:** 1 to 6

## **RSEM 7700 - Multi-Level Data Analysis**

Focus is on the analysis of nested data (e.g., students within classrooms and schools, public transportation users within cities) using HLM. Applications include multilevel multiple regression, growth models, and experimental designs. Familiarity with multiple regression and factorial ANOVA is required. Prereq: RSEM 7110 Intermediate Statistics or equivalent. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **RSEM 7800 - Intro to Structural Equation**

This course assumes no prior experience with Structural Equation Modeling, and serves as both theoretical and practical introduction. We will relate SEM to participants' previous knowledge of multiple linear regression, then expand to examine correlated and causally related latent constructs. Prereq: RSEM 7110: Intermediate Statistics or equivalent, or instructor consent.

Restriction: Restricted to Graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RSEM 7840 - Independent Study: RSEM**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 4

## **Risk Management**

### **RISK 1000 - RISK Intro to Risk Management and Insurance Careers**

This course introduces students to the many and varied career opportunities in the risk management and insurance industry via visiting industry professionals and on site industry visits. The course meets 1 hour each week. No co-credit with RISK 1001. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **RISK 1001 - Careers in Risk Management**

This course introduces high school students to the many and varied opportunities in the risk management and insurance industry via visiting professionals and on site industry visits. The course meets 1 hour each week. It is pass/fail. This course is equivalent to RISK 1000 Introduction to Risk Management and Insurance Careers in content. Note: Must be a high school student or recent high school graduate to enroll. CU Denver students cannot enroll. No co-credit with RISK 1000. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **RISK 3809 - Introduction to Risk Management**

This course introduces students to the fundamentals of risk and risk management for businesses and individuals. Corporate risk management techniques covered range from insurance to enterprise risk management. Personal risks discussed range from unemployment to retirement. Coreq: FNCE 3000. Insurance carrier operations are also considered. Restriction: junior/senior standing required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RISK 3949 - Experiential Learning in RMI Industry**

This course connects students to risk management service providers through the Risk Management and Insurance (RMI) Program. The students will intern with a specific provider. The RMI program and faculty will supervise and monitor tasks and assignments, and coordinate with the providers to maximize the learning experience. Restriction: junior/senior standing required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RISK 4129 - Practical Enterprise Risk Management**

Enterprise RM involves identifying the risks and opportunities faced by a firm, assessing them, developing and implementing a plan to address them, and then monitoring progress. Students will learn the basics of ERM while working with risk management professionals to develop and present such a plan to an ongoing business. Coreq: FNCE 3500. Cross-listed with RISK 6129. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RISK 4209 - Cyber Risk Management**

Computer networks and the data that travels upon them are under constant and increasing attack. This course will focus on a discussion of how state and non-state actors utilize this form of asymmetrical warfare to infiltrate government and corporate networks, risk management responds and risk strategies apply. Cross-listed with RISK 4209. Restriction: junior/senior standing or instructor permission. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RISK 4309 - Strategic Risk Management**

Strategic risk management (SRM) seeks to manage the risks inherent in a company's strategy, the risks to its plans to add value to its owners and society by raising its return on equity, allowing the company to compete successfully across a wider array of business environments, acting when its competitors cannot, and reducing its 'risk of ruin.' Because the future is unknown, SRM is charged with identifying and managing unknown uncertainties. The challenge of doing this makes for a fascinating course. Cross-listed with RISK 6309. Prereq: RISK 3809 and RISK 4809. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RISK 4409 - Employee Benefits and Workforce Risk Management**

The course surveys an array of popular employee benefit programs to attract, protect, and retain valued employees. It also focusses on risk management programs that invest in human capital and address the downside risks of employing a workforce. Restriction: Junior or Senior standing. Cross-listed with RISK 6409 and MGMT 4460/6760. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RISK 4509 - Global Risk Management**

This course is designed to study how risk is transferred globally. The course will include travel to London, which is the home to many of the world's largest insurers and reinsurers. While in London, we will visit and have presentations from insurance brokers, companies, Lloyds of London, and reinsurers. Prereq: One RISK course. Restriction: Junior or Senior standing. Cross-listed with RISK 6509. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RISK 4609 - Claims Management**

This course will provide an overview of the claims process in the Property and Casualty Insurance world. Students will learn about basic claims handling for personal and commercial

claims as well as how to determine coverage and legal issues. Prereq: RISK 3809 with a grade of at least C (GPA 2.0). Restriction: Junior/Senior standing required. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **RISK 4709 - Life & Health Insurance**

This course introduces students to life and health insurance concepts and policy types with an emphasis on insurance planning for individuals and businesses. The insurance industry and trends within it are also explored. Prereq: RISK 3809 and FNCE 3000 with a grade of at least C (GPA 2.0). Restriction: Junior/Senior standing required. Max hours: 3 Credits. **Semester**

**Hours:** 3 to 3

### **RISK 4809 - Property & Casualty Insurance**

Students learn the fundamentals and uses of personal and commercial property and casualty insurance, including cost and pricing issues. Insurance company financial management and current trends in the insurance industry are also explored. Restriction: Junior/Senior Standing, or permission of the instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RISK 4909 - Corporate Risk Management**

This course provides an overview of the corporate risk management process. It considers the ways companies identify their risk exposures, the tools used to measure and mitigate those exposures including the latest developments in alternative risk transfer, and ultimately, how risk management adds value to the firm. Prerequisite: RISK 3809 with a grade of C or higher. Corequisite: FNCE 3500. Restriction: Restricted to undergraduate Business majors with junior standing or higher. Cross-listed with FNCE 4909/6909 and RISK 6909. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

### **RISK 4950 - Special Topics: Cyber Risk Management & Cyber Warfare**

This course will focus on the evolution of cybercrime, cyber warfare and cyber terrorism, how state and non-state actors utilize asymmetrical warfare to infiltrate government and corporate networks, to manage the risks associated with information technology and mitigate the effects of cybercrime and cyber warfare. Cross-listed with RISK 6800. Restriction: Restricted to students with Junior or Senior standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RISK 6129 - Practical Enterprise Risk Management**

Enterprise RM involves identifying the risks and opportunities faced by a firm, assessing them, developing and implementing a plan to address them, and then monitoring progress. Students will learn the basics of ERM while working with risk management professionals to develop and present such a plan to an ongoing business. Cross-listed with RISK 4129. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

## **RISK 6209 - Cyber Risk Management**

Computer networks and the data that travels upon them are under constant and increasing attack. This course will focus on a discussion of how state and non-state actors utilize this form of asymmetrical warfare to infiltrate government and corporate networks, risk management responds and risk strategies apply. Cross-listed with RISK 4209. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

## **RISK 6309 - Strategic Risk Management**

This course introduces strategic risk management, the process of managing the uncertain and unknown risks to a firm's plans to add value to its owners and society. Cross-listed with RISK 4309. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **RISK 6409 - Employee Benefits and Workforce Risk Management**

The course surveys an array of popular employee benefit programs to attract, protect, and retain valued employees. It also focusses on risk management programs that invest in human capital and address the downside risks of employing a workforce. Cross-listed with RISK 4409 and MGMT 4460/6760. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **RISK 6509 - Global Risk Management**

This course is designed to study how risk is transferred globally. The course will include travel to London, which is the home to many of the world's largest insurers and reinsurers. While in London, we will visit and have presentations from insurance brokers, companies, Lloyds of London, and reinsurers. Prereq: One RISK course. Cross-listed with RISK 4509. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **RISK 6800 - Special Topics: Cyber Risk Management & Cyber Warfare**

This course will focus on the evolution of cybercrime, cyber warfare and cyber terrorism, how state and non-state actors utilize asymmetrical warfare to infiltrate government and corporate networks, to manage the risks associated with information technology and mitigate the effects of cybercrime and cyber warfare. Cross-listed with RISK 4950. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **RISK 6809 - Principles of Risk Management & Insurance**

This course prepares students for advanced work in insurance and RM. The course first covers the nature of risk and risk fundamentals, insurer operations and insurance regulation. It then considers the principal techniques of managing risk exposures and the basis of decision making

in management of business and personal risks. Coreq: BUSN 6640 or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RISK 6840 - Independent Study**

Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **RISK 6909 - Corporate Risk Management**

This course provides an overview of the corporate risk management process. It considers the ways companies identify their risk exposures, the tools used to measure and mitigate those exposures including the latest developments in alternative risk transfer, and ultimately, how risk management adds value to the firm. Co-req: BUSN 6640. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **School Library Program**

#### **SCHL 4030 - Information Literacy**

Teaching, assessment, and integration of information literacy skills. Reference collection development, policies and procedures, and use of and reference tools, including electronic resources. Emphasis is placed on standards-based collaborative planning and instruction with classroom teachers. Cross-listed with SCHL 5030. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **SCHL 4160 - Managing School Libraries**

Case studies in the organization and administration of school library and instructional leadership of programs and projects. Topics include project management, personnel administration, budget development, management strategies, copyright and intellectual freedom. Cross-listed with SCHL5160. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **SCHL 5030 - Information Literacy**

Teaching, assessment, and integration of information literacy skills. Reference collection development, policies and procedures, and use of and reference tools, including electronic resources. Emphasis is placed on standards-based collaborative planning and instruction with classroom teachers. Cross-listed with SCHL 4030. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **SCHL 5040 - Information Storage and Utilization**

Provides basic principles and practices of utilizing standard methods for organizing, accessing and storing information. Includes cataloging and classification in text-based and electronic systems. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **SCHL 5100 - School Libraries in the Digital Age**

An introduction to the School Library profession, including its history, standards, organizations, and current trends. Course focuses on foundational principles and roles of school librarianship, as well as methods for developing a culturally responsive resource collection, both print and electronic. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCHL 5160 - Managing School Libraries**

Case studies in the organization and administration of school library and instructional leadership of programs and projects. Topics include project management, personnel administration, budget development, management strategies, copyright and intellectual freedom. Cross-listed with SCHL 4160. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCHL 5200 - Promoting Literature in Schools**

Approaches the school library as a resource to promote literacy and development in children and young adults. Topics include genres of literature, methods for advising students towards appropriate reading and media resources, and the promotion of multiple literacies - information, new media, and transliteracy. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCHL 5830 - School Library Workshop**

Specific content and titles vary depending upon the particular school library skills addressed in the course. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 0.5 to 4

### **SCHL 5913 - School Library Field Experience**

Field experiences in selected K-12 school libraries that meet a high professional standard. The course serves as a capstone experience for endorsement and master's degree plans and helps induct students into the School Library profession by bridging theory and practice. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **School Psychology**

### **SPSY 2200 - Child and Adolescent Mental Health in Schools and Communities**

Introduces students to child and adolescent mental health and treatment, with a focus on trends in children's mental health, evidence-based treatments for childhood mental health

challenges, and child mental health careers. Course includes an emphasis on school-based mental health practices. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPSY 5010 - Introduction to Counseling in School Psychology**

Provides an overview of the counseling theories relevant to the practice of school psychology and an understanding of the role of theory in practice. Includes consideration of legal/ethical issues and both the cultural and developmental context of the major theories. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPSY 5600 - Behavior Analysis and Intervention**

This course introduces knowledge and skills necessary for school psychologists to proactively address child problem behaviors. Content includes application of Positive Behavioral Support (PBS), functional behavior analysis and intervention, evaluation of behavior change. Relevant federal, state regulations are also addressed. Restriction: Restricted to SPSY majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPSY 5800 - Workshop: Topics in School Psychology**

Repeatable. Max Hours: 15 Credits. **Semester Hours:** 1 to 6

### **SPSY 5840 - Independent Study: SPSY**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 4

### **SPSY 5900 - School-Based Multicultural Interventions**

The course will foster students' understanding and appreciation of diversity and its applications for school psychology practice, educational contexts, and mental health policy. Students will learn to evaluate and implement school-based mental health and educational interventions with a multicultural lens. Prereq: SPSY 6100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPSY 6100 - School Psychology: Professional and Legal Foundations**

This course covers topics related to the practice of school psychology, both past and present, including legal/ethical obligations/issues, accreditation, certification/licensure, culturally competent practice, roles/responsibilities, and evaluation and accountability. Observation in schools and related settings is required. Prereq: Admission to School Psychology Program. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPSY 6150 - Psychoeducational Assessment I**



Focuses on assessment of cognitive ability, cognitive processes, and achievement in children and adolescents. Topics include selection, administration, and interpretation of ability and achievement tests; psychological report writing, and psychometric, historical, theoretical, and cultural issues in assessment. Test administration required. Restriction: SPSY PsyD: Restricted to SPSY PsyD majors within the School of Education and Human Development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPSY 6160 - Psychoeducational Assessment II**

Focuses on the assessment of adaptive behavior, personality, and social-emotional functioning in children and adolescents. Topics include selection, administration, and interpretation of these types of measures; cultural considerations in psychological assessment, psychological report writing, and developing interventions. Test administration required. Prereq: SPSY 6150. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPSY 6170 - Applied Developmental Science and Assessment**

Examines theories and research in developmental psychology to provide a foundation for clinical services to children and families in applied settings. Includes coverage of developmental assessments and services for infants/toddlers. Prereq: SPSY 6150. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPSY 6350 - School-Based Interventions: Children, Youth and Families**

Provides theoretical and practice-oriented introduction to child therapy in schools. Weaves together skills and techniques essential to theory and implementation of psychotherapeutic techniques. Course activities compliment the systemic and group-based interventions examined in SPSY 6400. Prereq: RSEM 5110, COUN 5010, or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPSY 6400 - School-Based Interventions: Groups, Classrooms and Systems**

Provides students with advanced study of research on and techniques of classroom and small group interventions. Includes instruction on the evaluation of intervention effectiveness. Systemic, school-wide interventions are addressed. Prereq: RSEM 5100, RSEM 5110, COUN 5010. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPSY 6410 - Psychoeducational Assessment of Culturally and Linguistically Diverse Students**

Prepares students to provide psychoeducational assessments to children who are culturally and/or linguistically diverse. Content includes differentiation of language disorders versus language acquisition, and developing recommendations for accommodations and interventions

to meet the unique psychoeducational needs of diverse children and youth. Prereq: SPSY 6150. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPSY 6420 - Crisis Prevention, Planning and Intervention**

Introduces students to crisis theory, prevention research, and intervention strategies. The course is designed for school mental health professionals interested in developing advanced crisis counseling and intervention skills sufficient for use in school settings. The course emphasizes the importance of practical hands-on opportunities for skills development. Prereq: COUN 5010. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPSY 6450 - School-Based Consultation for Mental Health Professionals**

A wide range of traditional or emerging consultation models emphasizing practical application of empirically-based approaches to advance the social or academic competence of students, classrooms, schools and districts. Hands-on experience supplement course content as students develop, refine, and practice their own eclectic consultation approach. Prereq: SPSY 6100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPSY 6500 - Affective Bases of Behavior and Psychopathology**

This course provides students with advanced concentrated study of the affective bases of behavior, including affect, mood, and emotion. This course also includes coverage of psychopathology and the diagnosis of mental disorders. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPSY 6550 - Academic Interventions in School Psychology**

Provides training in knowledge and skills for the use of educational intervention practices in school psychology, including the development, implementation, and evaluation of academic interventions in the areas of reading, math, and written language; curriculum based measurement and progress monitoring. Prereq: SPSY 6150. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPSY 6700 - Advanced Seminar in School Psychology**

This course covers advanced topics related to the practice of school psychology including applying and interviewing for internship, certification/ licensure, capstone preparation and completion, and the development of a professional identity. Prereq: Prereq: SPSY 6911.

Restriction: Restricted to School Psychology majors. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **SPSY 6911 - School Psychology Practicum**

Supervised practice in providing comprehensive psychological services to children in grades preschool to 12. Students are placed in public schools or affiliated school-related agencies and supervised by practicing, licensed school psychologists. Prereq: SPSY 5600, SPSY 6100, SPSY 6150, SPSY 6160 or consent of instructor. Repeatable. Max Hours: 6 Credits. **Semester Hours: 3 to 3**

### **SPSY 6915 - Practicum with Culturally and Linguistically Diverse Students**

This school psychology practicum experience is focused on developing multicultural competencies with culturally and linguistically diverse students through either a cultural immersion experience in Mexico or a local practicum placement in a culturally and linguistically diverse setting. Repeatable. Max Hours: 9 Credits. **Semester Hours: 3 to 3**

### **SPSY 6917 - Advanced Practicum in Psychological Assessment**

Under faculty supervision provide psychological assessment services to clients in the UC Denver Student and Community Counseling Center. Prereq: SPSY 6150, SPSY 6160, and consent of the instructor. Max hours: 1 Credit. **Semester Hours: 1 to 1**

### **SPSY 6918 - Clinical Externship**

Clinical experience under supervision of licensed mental health professionals. Students participate in assessment and/or intervention in a variety of settings. Note: All field placements must be approved by the SPSY Program Director in advance of registration. Prereq: SPSY 6911. Repeatable. Max Hours: 6 Credits. **Semester Hours: 1 to 3**

### **SPSY 6930 - School Psychology Internship**

Supervised experience in the practice of school psychology with children and adolescents in a school or clinic setting. Prereq: SPSY 5900, SPSY 6410, SPSY 6911, SPSY 6350, SPSY 6400, SPSY 6450, SPSY 6500, or instructor consent. Repeatable. Max Hours: 6 Credits. **Semester Hours: 1 to 6**

### **SPSY 7500 - Biological and Neuropsychological Bases of Behavior**

Examines the biological basis of behavior emphasizing the relationship between the functions and structures of the brain including neuroanatomy, brain development, neurophysiology, neurochemistry, and psychopharmacology; and neuropsychological assessment principles. Max hours: 3 Credits. **Semester Hours: 3 to 3**

## **SPSY 7980 - Clinical Supervision & Admin of Psych Services**

Course prepares school psychologists to function in supervisory and administrative capacities in delivering mental health services. Content includes examination of clinical supervision theories, models, techniques; focus on development of skills for administrative roles, and understanding organizations from a systems perspective. Prereq: SPSY 6918. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SPSY 8980 - School Psychology Doctoral Capstone Project**

The Capstone Project is a culminating component of the program. Production of a scholarly project that illustrates the student's understanding of relevant topics in school psychology, the scope of contemporary practice, and the various roles of the professional school psychologist. Prereq: SPSY 6911 and SPSY 6700. Restriction: Restricted to SPSY-PSYD majors within the School of Education and Human Development. Max hours: 2 Credits. **Semester Hours:** 2 to 2

## **Sci, Tech, Engineer & Math Ed**

### **STME 4001 - Planning for Learning in Mathematics and Science**

This course explores aspects of complex curriculum and instructional concepts through the lens of mathematics and science educators. A focus will include: Socio-cultural learning theory in Math and Science; standards-based instruction; instructional design; formative & summative assessment, and differentiation so that meaningful instruction becomes accessible to all students. Cross-listed with STME 5001. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **STME 4051 - STEM Capstone: Secondary Education**

This course provides Secondary STEM Education students with a capstone learning experience that integrates knowledge of STEM content, students, and school context into socially-just and culturally responsive practices. Cross-listed with STME 5051. Restriction: Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **STME 5001 - Planning for Learning in Mathematics and Science**

This course explores aspects of complex curriculum and instructional concepts through the lens of mathematics and science educators. A focus will include: Socio-cultural learning theory in Math and Science; standards-based instruction; instructional design; formative & summative assessment, and differentiation so that meaningful instruction becomes accessible to all students. Cross-listed with STME 4001. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **STME 5051 - STEM Capstone: Secondary Education**

This course provides Secondary STEM Education students with a capstone learning experience that integrates knowledge of STEM content, students, and school context into socially-just and culturally responsive practices. Cross-listed with STME 4051. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Science Education**

### **SCED 2010 - Physical Science and Everyday Thinking**

An introductory course in physical science course designed for non-science majors, emphasizing topics relevant to everyday life. The course focuses on major physical concepts and their implications for making sense of the world around us. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCED 4004 - Elementary Science Teaching**

This course explores issues in elementary school science learning and teaching. Teacher candidates will develop knowledge of the nature of science and science content, engage in scientific inquiry, work to identify student conceptions, and plan and enact science instruction. Cross-listed with SCED 5004. Restriction: Professional Year Admission required. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **SCED 4050 - Introduction to Science Teaching and Learning**

Focus on conceptual development, conceptual change, collaborative learning, students' conceptions of various topics in science, practical issues encountered in facilitating learning, managing the classroom, formative and summative assessment, and differentiating instruction in a collaborative environment. Seminar for Learning Assistants. Student must be serving as a Learning Assistant in the CU Denver LA program. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **SCED 4400 - Theory and Pedagogy of Science Learning**

Examines current issues, strategies, materials, and technology related to the teaching and learning of science at the middle and secondary school levels. Science curriculum, teachers' pedagogical content knowledge, and research in science education are investigated. Cross-listed with SCED 5400. Restriction: Professional Year Admission required. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **SCED 4401 - Inquiry Science Pedagogy and Practices**

An in-depth study of inquiry science pedagogy and practices and how inquiry science supports standards-based education to make science accessible to ALL learners. The course provides a

review of research on pedagogy and practices that support student understanding, problem solving and creativity through the use of inquiry science. Prereq: Concurrent enrollment in an internship or permission of instructor is required. Cross-listed with SCED 5401. Restriction: Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCED 5004 - Elementary Science Teaching**

This course explores issues in elementary school science learning and teaching. Teacher candidates will develop knowledge of the nature of science and science content, engage in scientific inquiry, work to identify student conceptions, and plan and enact science instruction. Cross-listed with SCED 4004. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **SCED 5050 - Introduction to Science Teaching and Learning**

Focus on conceptual development, conceptual change, collaborative learning, students' conceptions of various topics in science, practical issues encountered in facilitating learning, managing the classroom, formative and summative assessment, and differentiating instruction in a collaborative environment. Seminar for Learning Assistants. Student must be serving as a Learning Assistant in the CU Denver LA program. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **SCED 5340 - Equity & Culture in Science Education: Local/Global**

This course examines literature in science education related to issues of culture and equity. Topics will be framed by an understanding of equity in diverse classrooms and how it informs research, curriculum and instruction. Cross-listed with ENVS 5340. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCED 5350 - Issues and Trends in Science Education**

Explores the current issues and trends in science education related to theory, pedagogy, practices, curriculum, and other contemporary topics. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCED 5360 - Physics Teaching and Learning**

In this course, we will explore how people learn physics, and how physics is and can be taught. We will read literature in physics, physics education research, education, psychology, and cognitive science and apply it to your physics teaching. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCED 5365 - Physics Teaching as Research**

In this course, you will research your teaching of physics, with the explicit goals of improving your teaching practice and improving student learning of physics. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **SCED 5400 - Theory and Pedagogy of Science Learning**

Examines current issues, strategies, materials, and technology related to the teaching and learning of science at the middle and secondary school levels. Science curriculum, teachers' pedagogical content knowledge, and research in science education are investigated. Cross-listed with SCED 4400. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **SCED 5401 - Inquiry Science Pedagogy and Practices**

An in-depth study of inquiry science pedagogy and practices and how inquiry science supports standards-based education to make science accessible to ALL learners. The course provides a review of research on pedagogy and practices that support student understanding, problem solving and creativity through the use of inquiry science. Prereq: Concurrent enrollment in an internship or permission of instructor is required. Cross-listed with SCED 4401. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCED 5416 - Math-Science Connections: Outdoor**

(Primarily for pre-secondary teachers.) Explores science concepts through outdoor activities appropriate for middle-grade students. Topics include how the nature of science and mathematics informs pedagogy, national and state standards, earth science and paleontology, orienteering and map usage, water analysis, astronomy and entomology. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **SCED 5500 - The Nature of Science**

This course is a critical exploration of science and scientific knowledge using an epistemological approach to ask (and possibly answer) questions about sociological issues in science and implications for science research, teaching and learning. Cross-listed with SCED 7500. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCED 5540 - Foundations of School Health Education**

This course is an overview of the principles of behavior theory as they relate to health education in both theory and practice. The course will examine the characteristics of effective school-based health education programs. Issues of ethnicity, culture, and race as they relate to health will be examined throughout the course. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCED 5550 - Curriculum Materials in Health Education**

This course will support the application of behavior theory as it applies to specific health content knowledge and skills. Special attention will be given to the skills, instructional strategies, and techniques needed to develop a culturally responsive classroom to promote success for all learners. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCED 5560 - Health Education Teaching Practices**

The course provides an overview of health education teaching and learning strategies for use in school settings. Action research will be introduced and utilized as a method to examine current teaching practices. Role-play, student assessment development, differentiation of instruction, and culturally responsive classroom practices will be examined. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **SCED 5650 - Environmental Education**

This course links the theory and practice of environmental education to inform curricular development and pedagogical knowledge. Cross-listed with ENVS 4650 and ENVS 5650. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCED 5660 - Energy Education**

Explores current energy problems. Students examine such topics as fuels from plants, fuels from wastes, fossil fuels, nuclear energy, wind energy, geothermal energy, solar energy, and energy conservation. Includes demonstration of available educational resources for grades K-12. The purpose of the course is to make technical aspects of energy accessible to the lay person. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCED 5670 - Experiential Learning In The Parks**

This course guides students through their experiences in a summer field placement, using readings, discussions and other interactive tools that focus on place-based education. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCED 5690 - Curriculum Development in Place-Based Education**

Students in this course apply knowledge about place-based education in schools and communities for educational purposes. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCED 5780 - Storytelling**



Explores the history, function, philosophy, and techniques of storytelling. This class also includes collecting, selecting, preparing, developing, and delivering stories. Research and resources are emphasized. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 1 to 4

### **SCED 5800 - Curriculum Workshop for Science Teachers**

Opportunity to work on curricular projects and problems in the schools. Explore various formal and informal learning environments such as study groups and after-school activities. Prereq: 18 semester hours in education and teaching experience or permission of instructor. Repeatable. Max Hours: 36 Credits. **Semester Hours:** 0.5 to 4

### **SCED 5840 - Independent Study**

Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 4

### **SCED 5920 - Readings in Elementary Education**

Max hours: 4 Credits. **Semester Hours:** 1 to 4

### **SCED 5930 - Internship in Secondary Education**

Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCED 5950 - Master's Thesis**

Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

### **SCED 6110 - Science and Math Curriculum Studies**

Students examine frameworks for curriculum design, discuss the psychological and philosophical foundations of curricula, and analyze the curriculum that they use in their own teaching. Students synthesize what teachers must do in order to effectively implement curricula. Prereq: Graduate student status. Cross-listed with SCED 7110. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCED 6120 - International Perspectives on the Curriculum**

Considers schooling patterns in the U.S., the U.K., Japan, Australia, and several European countries, examining different approaches to curriculum issues in relation to social, historical, and economic factors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SCED 6840 - Independent Study**

Repeatable. Max Hours: 4 Credits. **Semester Hours:** 1 to 4

## **SCED 6950 - Master's Thesis**

Max hours: 4 Credits. **Semester Hours:** 4 to 4

## **SCED 6990 - Special Topics**

Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **SCED 7110 - Science Math Curriculum Study**

Students examine frameworks for curriculum design, discuss the psychological and philosophical foundations of curricula, and analyze the curriculum that they use in their own teaching. Students synthesize what teachers must do in order to effectively implement curricula. Restriction: Graduate student status. Cross-listed with SCED 6110. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SCED 7500 - The Nature of Science**

This course is a critical exploration of science and scientific knowledge using an epistemological approach to ask (and possibly answer) questions about sociological issues in science and implications for science research, teaching and learning. Cross-listed with SCED 5500. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SCED 7840 - Independent Study**

Max hours: 3 Credits. **Semester Hours:** 1 to 3

## **Social Justice**

### **SJUS 2000 - Foundations in Social Justice**

Examines how well the United States, Colorado and Denver are doing in addressing issues of social justice, such as inequality and environmental degradation. Explores various modes of democratic participation -- electoral politics, community activism, and lifestyle changes -- in advancing social justice. Term offered: fall. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS1 **Semester Hours:** 3 to 3

### **SJUS 3939 - Internship**

Internship/experiential learning involving work in the community that is centered upon social justice and which includes a reflective component and some type of public dissemination. Prereq: Students must have junior standing and at least a 2.75 GPA and must work with

Experiential Learning Center advising to complete a course contract and gain approval. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SJUS 4001 - Social Justice Senior Project**

Students design and carry out research projects that address important civic issues in collaboration with community partners and present their findings to the partners and academic community. This course also involves reflection on social justice means and goals. This is an individually structured version of SJUS 4000 so students may not receive credit for SJUS 4001 if they have already received credit for SJUS 4000 and may not receive credit for SJUS 4000 if they have already received credit for SJUS 4001. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SJUS 4050 - Special Topics: Social Justice**

Special Topics in Social Justice will be covered. Cross-listed with SJUS 5050. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 3

### **SJUS 4840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SJUS 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **SJUS 5050 - Special Topics: Social Justice**

Special Topics in Social Justice will be covered. Cross-listed with SJUS 4050. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 3 to 3

### **SJUS 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **Social Sciences**

### **SSCI 4050 - Special Topics in Law Studies**

These topics courses are concerned with specialized aspects of the study of law within the social sciences from various theoretical and research perspectives. These courses are interdisciplinary and serve as a forum for discussion specific to students interested in law studies. Term offered: fall, spring. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 6

### **SSCI 4060 - Topics in Law Studies: Constitutional Thought**

These topics courses are concerned with specialized aspects of the study of constitutional thought as related to law studies. These courses are interdisciplinary and serve as a forum for discussion specific to students interested in law studies. Term offered: fall, spring. Repeatable. Max hours: 6 Credits. **Semester Hours:** 3 to 6

### **SSCI 4070 - Topics in Law Studies: Social Context of Law**

These topics courses are concerned with specialized aspects of the study of the social context of law. These courses are interdisciplinary and serve as a forum for discussion specific to students interested in law studies. Term offered: fall, spring. Repeatable. Max hours: 6 Credits. **Semester Hours:** 3 to 6

### **SSCI 4251 - Introduction to Legal Studies**

A survey of the United States legal system, including lawmaking powers, jurisdiction, court procedures, professional ethics and major principles of business law, contracts, estates and probate, family law, property and torts. Cross-listed with HUMN 4251/HUMN 5251/SSCI 5251. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 4325 - First Amendment: Theory and Context**

First Amendment jurisprudence including free speech/responsibility, sedition/seditious libel/dissent, prior restraints, time/place/manner restrictions, hate/intimidating speech, defamation, privacy/security tensions, intellectual property/public good, advertising, corporate speech, sexual expression, and public status of religion. Cross-listed with HUMN 4325, HUMN

5325, SSCI 5325, PSCI 4325 and PSCI 5325. Term offered: spring. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **SSCI 4840 - Independent Study**

Directed study based on a specific subfield of social sciences. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **SSCI 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **SSCI 5000 - 19th and 20th Century Continental Philosophy**

A seminar on key problems and thinkers in the nineteenth & twentieth century continental philosophical traditions and their contemporary significance. Restriction: Restricted to Graduate and Graduate Non-Degree majors. PHIL 3002 or PHIL 3022 are strongly recommended preparation for optimal student success. Cross-listed with PHIL 4000/5000 and HUMN 5000. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5013 - Methods and Practices of Graduate Interdisciplinary Humanities**

The second of three required Master of Humanities core courses, this course introduces beginning graduate students to methodologies and intellectual frameworks for gathering, organizing, and developing interdisciplinary research. Focus is on the application of theories and methods of research, interpretation and analysis in humanistic research through readings that explore philosophical and cultural discourses have altered theory and method. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN/PHIL 5013. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **SSCI 5020 - Foundations and Theories of Interdisciplinary Social Science**

The first of the Master of Social Science core courses, this course exposes beginning graduate student to critical , key analytic models, and their application in disciplines that comprise the social sciences (classical anthropology, sociology, sociology of religion, philosophy of history, political theory, classical psychology, etc.) for the purpose of graduate-level interdisciplinary social science research. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HUMN 5020 and PHIL 5020. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SSCI 5023 - Research Perspectives in Social Science**

Introduces interdisciplinary social research through a critical examination of various methodological approaches. Each student formulates a research proposal which includes a research question, a review of the literature, and methods of study. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Term offered: spring, fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **SSCI 5025 - Foundations and Theories of Interdisciplinary Humanities**

Exposes the beginning graduate student to exemplary works and methodologies of disciplines oriented to humanities and social sciences, such as philosophy, sociology, history, communication, fine arts, and literature. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5025. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SSCI 5050 - Topics in Social Science**

These topic seminars are concerned with specialized aspects of the social sciences from various theoretical and research perspectives. These courses are interdisciplinary and serve as a forum for discussion of individual projects and theses. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Term offered: fall, spring. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

## **SSCI 5101 - Pragmatism: Classical American Philosophy**

The most significant philosophical tradition born in the United States is pragmatism. Examines several of the most important classical works of this tradition, the influence of thinkers who

have helped pragmatism, and the contemporary relevance of this tradition. Figures who may be included in this course are: Emerson, Pierce, Royce, James, Dewey, Mead, Rorty. Restriction: Restricted to Graduate and Graduate Non-Degree majors. An introductory course in philosophy is strongly recommended for optimal success. Cross-listed with PHIL 4101, 5101, HUMN 5101. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5242 - Bioethics**

Examines some of the major moral issues confronting the nation's health care system. The class will search for solutions to such problems as financing health care for those unable to do so on their own, determining the extent of a patient's right to both refuse and demand certain types of medical treatment, and allocating scarce medical resources such as life-saving vital organs. The springboard for examining these issues will be the doctor or patient relationship framed by the moral principles of respect for persons and beneficence. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4242, PHIL 5242, HUMN 5242. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5251 - Introduction to Legal Studies**

A survey of the United States legal system, including lawmaking powers, jurisdiction, court procedures, professional ethics and major principles of business law, contracts, estates and probate, family law, property and torts. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 4251/HUMN 5251/SSCI 4241. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5325 - First Amendment: Theory and Context**

First Amendment jurisprudence including free speech/responsibility, sedition/seditious libel/dissent, prior restraints, time/place/manner restrictions, hate/intimidating speech, defamation, privacy/security tensions, intellectual property/public good, advertising, corporate speech, sexual expression, and public status of religion. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 4325, HUMN 5325, SSCI 4325, PSCI 4325 and PSCI 5325. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5400 - Women and Violence**

Analyzes the social, political, legal, and psychological aspects of violence against women and addresses: definitions of the problem, demographics, survivors, perpetrators, children who witness, bystanders, strategies and tactics of abuse and survival, along with strategies for prevention, intervention, treatment and social change. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5530 - Social Construction of the Self**

Investigates theories that address the construction of self and how that construction is constrained by culture, politics, society and historical moment. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5540 - Law, Diversity and Community in United States History**

Engaging extensive primary and secondary source material, course applies an interdisciplinary approach to diversity and conflict that often surrounds the quest for economic, moral and social inclusion in the United States. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5540. Term offered: fall. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **SSCI 5550 - Paris 1910: Art, Philosophy and Psychology**

Traces the influences of philosophy, psychology, and art in the English, French, and German-speaking worlds in the early twentieth century. This intellectual history is extended to broader cultural and political contexts. Key period is between 1910 and 1968, when modernity's key aspirations and tensions became explicit. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5550 and PHIL 5550. Max Hours: 3 Credits.

**Semester Hours:** 3 to 3

### **SSCI 5600 - Philosophy of Religion**

Nature of religion and methods of studying it. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5600, PHIL 4600, 5600, RLST 4060, and 5060. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5650 - Reflections on Modernity**

Explores modernity as a historical epoch and a theoretical space, looking at the commentaries and reflections of influential 20th century thinkers including Adorno, Arendt, Levinas, Merleau-Ponty, Habermas and Foucault. Examines how the theoretical inclinations of modernity were influenced by politics, art, literature and culture. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5650 and PHIL 5650. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5710 - Women and Religion**

A sociological exploration of the contemporary roles of women in religion. Course examines American and world religious groups with an eye to women's involvement. Considers how women have changed these traditions as they take on leadership roles and discusses the tensions that arise within these traditions as a result of their expanded participation. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN



5710, SSCI 4710, WGST 4710/5710, RLST 4710/5710. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5720 - Sexuality, Gender and Their Visual Representation**

Studies sexuality, gender and identity representation from classical antiquity through the present in the visual arts. Uses the literature of visibility, feminism, race and queer theory. Explores representations of femininity, masculinity and androgyny and their reinforcement and challenge to gender-identity norms. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5720 and WGST 5720. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5750 - Philosophical Psychology**

Explores debates about psyche and body, mind and world, self and others, and consciousness and nature. Examines the philosophical questions related to those debates that arise within theories of perception, affect and cognition offered by influential psychological models. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5750, PHIL 4755 and PHIL 5755. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5770 - Imperialism, Post-Colonial Theory, Visual Discourse**

Western empires disseminate political, social, economic & cultural practices through complex interplay of cultural practices. Visual production is a complex site for meaning making within imperialism. Examines how visual discourses operated to create meaning for audiences, through focus on postcolonial critique. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5770. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5830 - Grant Writing for Nonprofits**

Designed to help current and future professionals in the nonprofit sector understand the social, political, and economic context and mechanics of pursuing grants, government contracts, and other funding for nonprofit organizations. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5833 - Existentialism**

Examines one of the most influential movements in recent European thought, beginning with existentialism's 19th century roots, and continuing on to the existentialist philosophers of the 20th century. Figures covered may include Dostoyevsky, Kierkegaard, Nietzsche, Heidegger, Sartre and de Beauvoir. Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with PHIL 4833/5833 and HUMN 5833. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5840 - Independent Study: SSCI**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **SSCI 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **SSCI 5920 - Philosophy of Media and Technology**

A philosophical examination of interrelationships between contemporary media, technology, and their impacts upon character of contemporary life and values. Topics may include ethics, epistemology, democracy, advertising, media literacy and criticism. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4920, 5920, HUMN 5920. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5933 - Philosophy of Eros**

What does it mean to understand philosophy as an erotic activity? This question will be examined, first by studying Plato's dialogues-such as Lysis, Symposium and Republic-and then by reading texts from Sigmund Freud, Michael Foucault and others. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4933, WGST 4933/5933 and HUMN 5933. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **SSCI 6010 - Methods and Theories of Feminism and Gender Studies**

Provides graduate-level interdisciplinary study in historiography, methodologies and theories of women's, gender and sexuality studies and considers how culture is constructed around these categories. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with WGST 6010 and HUMN 6010. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SSCI 6950 - Master's Thesis**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 8 Credits. **Semester Hours:** 1 to 8

### **SSCI 6960 - Master's Project or Report**

Research which may be based on field work. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 9 Credits. **Semester Hours:** 1 to 6

## **Sociology**

### **SOCY 1001 - Understanding the Social World**

This survey course provides an introduction to the sociological study of society, including patterns of social relationships, social interaction, and culture. Typical course topics include socialization, the family, criminology, deviance, inequalities, sex and gender, race and ethnicity, health and medicine, self and identities, and globalization. Students gain an understanding of how organizations, institutions, and structures of society shape individual and group experiences. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS3. **Semester Hours:** 3 to 3

### **SOCY 1111 - First Year Seminar**

Restriction: Restricted to Freshman level students. Repeatable. Term offered: spring, fall. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **SOCY 1500 - From Killer Apps to Killer Bots: Technology and Social Change**

A young college student updates her social media page to stay in touch with family and high school friends while making new friends on campus. An upstart automobile manufacturer builds a factory manned by robots to produce electronic vehicles designed to reduce the environmental impact of automobiles. The military deploys battalions of unmanned drones to engage with adversaries without risking the lives of their soldiers. Technology mediates nearly

all aspects of social life, from reproduction and parenting to crime control and health care. This course is designed to provide students an introduction to the different social dimensions of technological innovation as well as the theoretical and methodological tools sociologists use to study them. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 2001 - Inequalities in Social World**

Introduces students to critical sociological perspectives on social inequality. Major sociological factors contributing to the production and reproduction of inequality in various social organizations and institutions are analyzed. Prereq: SOCY 1001 or permission of the instructor. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 2440 - Deviance and Social Control**

This class explores different forms of deviance and ways in which deviant categories are created, and examines sociological theories of deviance, social order, and social power. The course also addresses how different groups gain control over social definitions and the consequences these definitions have in the form of norms, laws, and informal social sanctions. The impact of these definitions for individuals also is considered, namely for how people construct and manage their identities. Topics covered include drug smuggling, gang membership, computer hacking, shoplifting, homelessness, eating disorders, transability, BDSM, self-injury, and sex work. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 2462 - Introduction to Social Psychology**

Studies the development and functioning of persons, especially within a group context, and the dynamics of small groups. Emphasis on the import of symbols for human behavior, development of self-concepts, and processes of competition and cooperation in group dynamics. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-SS3 **Semester Hours:** 3 to 3

### **SOCY 3001 - Urban Sociology**

Explores U.S. cities as built environments, cultural spaces, and sources of community. Topics include the history of urbanization; social and spatial organization of cities; race and residential segregation; suburbanization; and urban problems such as crime, environmental hazards, and gentrification. Prereq: Sophomore standing or higher. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 3010 - Sociology of Human Sexuality**

Increases the understanding of differences in views of sexuality, specifically the link between sex and reproduction and its role as the motivation for gender roles and sex acts. Explores the history of sexuality, cross-cultural studies and primate modeling. Prereq: sophomore standing or higher or permission of instructor. Cross-listed with WGST 3010. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 3020 - Race and Ethnicity in the U.S.**

A sociological examination of race and ethnicity in contemporary U.S. society. Includes a focus on the nature and causes of prejudice and discrimination. Dominant-minority relations are examined, with an emphasis on current status of minority groups and issues. Prereq: sophomore standing or higher or permission of instructor. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 3040 - Drugs, Alcohol & Society**

Explores our culture's relationship with drugs and alcohol from a sociological perspective, investigating all spheres of substance use: recreational, medicinal, instrumental, & religious. Examines our long turbulent history with these chemicals, and ways in which they have shaped our society. Prereq: sophomore standing or higher or permission of instructor. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 3050 - Sociology of Education**

Drawing from theories in the sociology of education, this course evaluates the relationship between race, ethnicity, gender, class, immigration status and educational experiences, aspirations, and outcomes. Topics include socialization, tracking, educational policy, college access, and educational equity. Prereq: sophomore standing or higher or permission of instructor. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 3080 - Sex and Gender**

Causes and consequences of sex role differentiation at the individual, group and societal levels. Current issues related to changing norms and values concerning gender in modern society are examined. Prereq: sophomore standing or higher or permission of instructor. Cross-listed with WGST 3080. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 3115 - Quantitative Methods & Analysis**

This course provides students with a basic understanding of survey methods and statistical analysis. In addition to learning the basics of inferential statistics and sampling methods, students will conduct their own survey research, analyze data, and produce reports. Prereq: SOCY 1001 with a C or higher. Term offered: fall, spring, summer. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **SOCY 3119 - Qualitative Methods**

This course focuses on the development of skills involved in designing qualitative research studies, collecting and analyzing qualitative data and evaluating qualitative research. Primary focus is on ethnography, in-depth interviewing, and content analysis. Students read, analyze, and conduct qualitative research. Prereq: SOCY 1001 with a C or higher. Term offered: fall, spring. Max hours: 4 Credits. **Semester Hours:** 4 to 4

### **SOCY 3140 - Sociological Theory**

An overview of major sociological theories and concepts. The emergence of the discipline and the contemporary development of sociological theories are examined. Preq: SOCY 1001. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 3300 - Social Problems**

Explores how societies define and attempt to solve "social problems." Possible topics: income disparities, race/ethnic relations, gender inequality, and sexuality, in addition to the relationship between these issues and social institutions such as education, religion, health care, and criminal justice. Prereq: sophomore standing or higher or permission of instructor. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 3440 - Medical Sociology**

This course covers key issues in population health and emphasizes how sociological perspectives both challenge and augment biomedical perspectives on health and health care. We also discuss the social causes and consequences of race/ethnic, sex, and socioeconomic disparities in health. Prereq: sophomore standing or higher or permission of instructor. Cross-listed with PBHL 3440. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 3490 - Criminology**

Theories, nature and causes of crime as a social phenomenon. Processes of making laws, breaking laws, and reaction toward the breaking of laws. Prereq: sophomore standing or higher or permission of instructor. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 3570 - Death & Dying: Social & Medical Perspectives**

Focusing on death, dying and bereavement using medical and social perspectives, this course explores how illness, prolonged dying and sudden death impact care providers, families and communities. Discussion, film, readings and music address the connection of social and medical

issues. Cross-listed with HEHM 3570. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 3650 - Sociology of Music**

Focuses on the meaning/use of music in society. Explores censorship, organization of the recording industry, sociocultural contexts in which music is produced/distributed/listened to and the relationship between music and technology along with musical applications and associations. Prereq: sophomore standing or higher or permission of instructor. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 3700 - Sociology of the Family**

The family as a social institution. Historical development and contemporary cross-cultural analysis, with emphasis on contemporary American families. Prereq: sophomore standing or higher or permission of instructor. Cross-listed with WGST 3700. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 3720 - Global Perspectives on Social Issues**

Various cultural and social frameworks are used in a sociological examination and international comparison of select social issues, such as globalization, terrorism, inequality and discrimination. Analysis of selected issues across cultures explores how societal and cultural characteristics shape these issues. Prereq: sophomore standing or higher or permission of instructor. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 3750 - Animals and Society**

An examination into the category of "animal" as a social construct and the relationship between humans and non-human animals, which produces consequences of difference and subsequent inequality. The course utilizes different sociological perspectives to examine the social patterns, processes, and institutions that establish our lived experiences with non-human animals. Prereq: Sophomore standing or higher or by instructor permission. Max hours: 3 Credits **Semester Hours:** 3 to 3

### **SOCY 3840 - Independent Study: SOCY**

Prereq: sophomore standing or permission of the instructor. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **SOCY 3939 - Internship**

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Note: students must work with the Experiential Learning Center

advising to complete a course contract and gain approval. Prereq: sophomore standing or higher or permission of instructor. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **SOCY 3995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Department consent required. Repeatable. Max hours: 12 Credits. **Semester Hours:** 3 to 6

### **SOCY 4020 - Race, Culture and Immigration**

In this course, we will consider the social and legal construction of race and immigration. We will also explore how immigrants have been racialized both historically and in the current moment. In addition, we will consider the role of culture in shaping the immigrant experience and immigrant outcomes. Restriction: Junior standing or higher or instructor permission. Cross-listed with SOCY 5020, ETST 4020 and ETST 5020. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 4050 - Health Disparities**

This course focuses on social, economic, and political factors that shape the uneven distribution of health and illness in the United States. Social determinants of health are explored, including socioeconomic status, race and ethnicity, neighborhood environments, social relationships, and gender. Cross-listed with SOCY 5050. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 4110 - Sociology of Health Care**

Examines U.S. health care institutions and issues such as rising costs, the effects of class, racial and gender inequality, professionalization and monopolization of roles, construction of illness and health, managed care, for-profit health care, and ethics of health care decisions. Prereq: junior standing or higher or permission of instructor. Cross-listed with SOCY 5110. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 4220 - Population Change and Analysis**

Concepts of population change, methods of analysis, and applications to contemporary social issues. Topics include age and sex distributions, fertility, mortality, and migration, and the social causes and consequences of these phenomena. Prereq: Junior standing or permission of the instructor. Cross-listed with SOCY 5220. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 4270 - Social Meanings of Reproduction**



Reproduction involves more than biological processes, assuming symbolic, political, and ideological meanings. This course examines contested meanings of reproduction, including how people experience reproduction, controversies over who should reproduce (and under what circumstances), and how public policy mediates these conflicts. Prereq: Junior standing or permission of the instructor. Cross-listed with SOCY 5270, WGST 4270 and WGST 5270. Term offered: fall. Max hours 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 4290 - Aging, Society and Social Policy**

A sociological examination of central issues (e.g., work, retirement, family support, health) pertaining to the aging population. Heterogeneity in aging, as shaped by gender, race, ethnicity and social class is addressed, as well as policies pertaining to the adult population. Prereq: Junior standing or permission of the instructor. Cross-listed with SOCY 5290. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 4340 - Juvenile Delinquency**

Factors involved in delinquent behavior. Problems of adjustment for delinquents, and factors in treatment and post-treatment adjustment. Major theories covered include strain theory, social learning theory, control theory, and labeling theory. Course also reviews methods for testing these theories. Prereq: junior standing or higher or permission of the instructor. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 4440 - Poverty and Social Inequality**

Investigates the distribution of wealth, income, and economic power in the United States with a focus on social institutions and factors that shape inequality. Prereq: Junior standing or permission of the instructor. Cross-listed with SOCY 5440. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 4460 - Hate Groups and Group Violence**

Social sciences help us understand the phenomena of hate groups and group violence and contribute toward their elimination. Examples are examined using theoretical perspectives on different levels of analysis and within different areas of research. Prereq: Junior standing or permission of the instructor. Cross-listed with SOCY 5460. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 4475 - Self and Identity**

A course in social psychology focusing on individuals in social interaction. Focuses of self-conception, identity, presentation of self, and self and emotion management. Examines major theories and research in social psychology. Prereq: Junior standing or permission of the

instructor. Cross-listed with SOCY 5475. Term offered: summer. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **SOCY 4610 - Sociology of Religion**

This course introduces students to the nature and functions of religion in society, emphasizing western religions in the U.S. Students will develop and apply an understanding of classic and modern sociological theories of religion to current events and disciplinary developments. Cross-listed with SOCY 5610, RLST 4020, RLST 5020. Prereq: junior standing or higher or permission of instructor. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 4640 - Sociology of Childhood and Adolescence**

An in-depth overview of the theories and research regarding the life course understanding of infancy, childhood and adolescence. Children's lives and cultures in relation to adults and their transition from childhood to adolescence are studied. Prereq: junior standing or higher or permission of instructor. Cross-listed with SOCY 5640. Term offered: fall. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **SOCY 4700 - Sociology of Law**

Consideration of the formulation, interpretation, and legitimacy of legal rules within the context of social organization. The examination of a major social institution in modern society. Prereq: junior standing or higher or permission of instructor. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 4740 - Courts & Society**

Courts are a centerpiece of modern legal systems that mediate social relationships and people's relationship to the state. This course explores the connection between courts and democratic society by considering the operation and evolution of courts in the U.S. Cross-listed with SOCY 5740. Restriction: Restricted to Junior standing or above. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 4780 - Violence in Relationships**

Course focuses on the study of violence among individuals involved in intimate relationships; factors in society such as norms, laws and institutions that are related to creating violence among intimates; and social policies, prevention, intervention and treatment programs. Prereq: junior standing or higher or permission of instructor. Cross-listed with SOCY 5780, WGST 4780 and WGST 5780. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 4830 - Senior Capstone: Worklife Practices & Policies**

Introduces students to tools and develops skills to facilitate internship and job search. Students gain understanding of work contexts, exploring employment laws and policies, dynamics of race and gender in job searching, and research on careers and job negotiation. Prereq: Must have earned a minimum of 75 credits. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 4840 - Independent Study: SOCY**

Prereq: junior standing or higher or permission of instructor. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **SOCY 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Prereq: junior standing or higher. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **SOCY 4995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Department consent required. Repeatable. Max hours: 12 Credits. **Semester Hours:** 3 to 6

### **SOCY 5000 - Professional Seminar: Sociological Inquiry**

Introduces sociology graduate students to sociology as a discipline and profession. Conveys practical skills and knowledge useful to the pursuit of a graduate degree. Introduces students to sociology graduate faculty members and their research interests. Restriction: Students must be accepted to the MA in Sociology or get instructor permission in order to enroll in this course. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 5016 - Social Theory**

An overview of major theories across the social behavioral sciences examining social order, integration, conflict, and change. The course emphasizes a cross disciplinary approach, highlighting works of historical and contemporary relevance. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 5020 - Race, Culture and Immigration**

In this course, we will consider the social and legal construction of race and immigration. We will also explore how immigrants have been racialized both historically and in the current moment. In addition, we will consider the role of culture in shaping the immigrant experience and immigrant outcomes. Restriction: Graduate standing or instructor permission. Cross-listed with SOCY 4020, ETST 4020 and ETST 5020. Term offered: spring. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **SOCY 5024 - Seminar: Research Methods I**

Problems and procedures in research design, data collection and processing. Note: Required for M.A. graduate students in sociology. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 5050 - Health Disparities**

This course focuses on social, economic, and political factors that shape the uneven distribution of health and illness in the United States. Social determinants of health are explored, including socioeconomic status, race and ethnicity, neighborhood environments, social relationships, and gender. Prereq: graduate standing. Cross-listed with SOCY 4050. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 5110 - Sociology of Health Care**

Examines U.S. health care institutions and issues such as rising costs, the effects of class, racial and gender inequality, professionalization and monopolization of roles, construction of illness and health, managed care, for-profit health care, and ethics of health care decisions. Prereq: Graduate standing. Cross-listed with SOCY 4110. Term offered: fall. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **SOCY 5183 - Seminar: Quantitative Data Analysis**

A research-oriented seminar stressing the utilization of social data already collected in the test or generation of sociological theory. Note: Required for M.A. graduate students in sociology. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 5193 - Seminar: Qualitative Data Analysis**

Develops skills for designing studies, collecting and analyzing data, and evaluating qualitative research. Concentrates on ethnography, in-depth interviewing, and content analysis. Students read examples of qualitative research and about the process of qualitative research, as well as conducting independent research. Note: Required for M.A. graduate students in sociology.

Prereq: graduate standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SOCY 5220 - Population Change and Analysis**

Concepts of population change, methods of analysis, and applications to contemporary social issues. Topics include age and sex distributions, fertility, mortality, and migration, and the social causes and consequences of these phenomena. Cross-listed with SOCY 4220. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SOCY 5270 - Soci Meanings of Reproduction**

Reproduction involves more than biological processes, assuming symbolic, political, and ideological meanings. This course examines contested meanings of reproduction, including how people experience reproduction, controversies over who should reproduce (and under what circumstances), and how public policy mediates these conflicts. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SOCY 4270, WGST 4270 and WGST 5270. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SOCY 5290 - Aging, Society and Social Policy**

A sociological examination of central issues (e.g., work, retirement, family support, health) pertaining to the aging population. Heterogeneity in aging, as shaped by gender, race, ethnicity and social class is addressed, as well as policies pertaining to the adult population. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SOCY 4290. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SOCY 5430 - Societies in Transition**

A description and analysis of changing social structures and social relationships as a response to technological innovation and change. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SOCY 5440 - Poverty and Social Inequality**

Investigates the distribution of wealth, income, and economic power in the United States with a focus on social institutions and factors that shape inequality. Prereq: Graduate standing. Cross-listed with SOCY 4440. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SOCY 5460 - Hate Groups and Group Violence**

Social sciences help us understand the phenomena of hate groups and group violence and contribute toward their elimination. Examples are examined using theoretical perspectives on different levels of analysis and within different areas of research. Cross-listed with SOCY 4460. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SOCY 5475 - Self and Identity**

A course in social psychology focusing on individuals in social interaction. Focuses of self-conception, identity, presentation of self, and self and emotion management. Examines major theories and research in social psychology. Prereq: Graduate standing. Cross-listed with SOCY 4475. Term offered: summer. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 5550 - Seminar: Sociology of the Family**

An intensive review and analysis of the family as a social institution. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 5610 - Sociology of Religion**

This course introduces students to the nature and functions of religion in society, emphasizing western religions in the U.S. Students will develop and apply an understanding of classic and modern sociological theories of religion to current events and disciplinary developments. Cross-listed with SOCY 4610, RLST 4020, RLST 5020. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 5640 - Sociology of Childhood and Adolescence**

An in-depth overview of the theories and research regarding the life course understanding of infancy, childhood and adolescence. Children's lives and cultures in relation to adults and their transition from childhood to adolescence are studied. Cross-listed with SOCY 4640. Prereq: Graduate standing. Term offered: summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 5650 - Sociology of Adulthood and Aging**

Examination of the adult life course-post-adolescence to death, focusing on key social transitions of adulthood (e.g., independence from parents, marriage, retirement), and historical, institutional, and social factors that create variation in their timing, meaning, and individuals' role experiences. Cross-listed with SOCY 4650. Prereq: Graduate standing. Term offered: spring. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 5660 - Seminar: Social Psychology**

Sociological approaches to the study of the self, role theory, persons in situations, identifications, socialization, and other characteristics of persons in society. Prereq: Graduate standing. Term offered: summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 5690 - Crime and Inequality Over the Life Course**

Life-course perspective on inequality and crime. Studies transitions, trajectories and turning points as key features of the life course. Considers how inequalities and criminal behavior are shaped by timing of experiences, historical and geographic contexts, others' lives, and human

agency. Prereq: Graduate standing. Cross-listed with SOCY 4690. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 5740 - Courts & Society**

Courts are a centerpiece of modern legal systems that mediate social relationships and people's relationship to the state. This course explores the connection between courts and democratic society by considering the operation and evolution of courts in the U.S. Cross-listed with SOCY 4740. Prereq: graduate standing. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 5750 - Seminar: Criminology**

An intensive review and analysis of the literature and research dealing with sociology of crime in modern society. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 5770 - Advanced Topics in Sociology**

Advanced study of special topics in sociology to be selected by the instructor. Note: May be repeated for credit when topics vary. Cross-listed with SOCY 4770. Prereq: Graduate standing. Repeatable. Max hours: 9 Credits. **Semester Hours:** 1 to 3

### **SOCY 5780 - Violence in Relationships**

Course focuses on the study of violence among individuals involved in intimate relationships; factors in society such as norms, laws and institutions that are related to creating violence among intimates; and social policies, prevention, intervention and treatment programs. Prereq: Graduate standing. Cross-listed with SOCY 4780, WGST 4780 and WGST 5780. Term offered: fall. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **SOCY 5840 - Independent Study: SOCY**

Prereq: Graduate standing. Term offered: fall, spring, summer. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **SOCY 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **SOCY 5955 - Master's Thesis**

Prereq: Graduate standing. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 6

### **SOCY 5964 - Master's Report**

Prereq: Graduate standing. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 3

### **SOCY 5995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Department consent required. Repeatable. Max hours: 12 Credits **Semester Hours:** 3 to 6

## **Spanish**

### **SPAN 1000 - Introduction to Cultures of the Spanish Speaking World**

Introduces students to the Spanish-speaking cultures of Spain, Latin America, and the United States through a historical overview and a focus on contemporary politics and culture. Note: Taught in English. Term offered: fall, spring, summer. Max hours: 3 Credits. GT: Course is approved by the Colorado Dept of Higher Education for statewide guaranteed transfer, GT-AH1 **Semester Hours:** 3 to 3

### **SPAN 1010 - Beginning Spanish I**

Introduces basic Spanish pronunciation and grammar, useful vocabulary and idioms. Readings and class discussions relating to the Hispanic world. Note: Students may not enroll in any lower division (1000/2000) language skills course in which their level of proficiency exceeds that of the course. Students placing into a course through any means other than following the regular sequence must consult with an appropriate faculty member of the Dept. of Modern Languages prior to enrollment. Term offered: fall, spring, summer. Max hours: 5 Credits. **Semester Hours:** 5 to 5

### **SPAN 1020 - Beginning Spanish II**

(Continuation of SPAN 1010.) Further development of listening, speaking, reading and writing skills. Note: Students may not enroll in any lower division (1000/2000) language skills course in which their level of proficiency exceeds that of the course. Students placing into a course through any means other than following the regular sequence must consult with an appropriate faculty member of the Dept. of Modern Languages prior to enrollment. Note: This course assumes that students have passed SPAN 1010 or equivalent, or have taken one year of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 1010 is



recommended for success in this course. This course is not intended for native speakers. Term offered: fall, spring, summer. Max hours: 5 Credits. **Semester Hours:** 5 to 5

### **SPAN 1070 - Spanish Medical Conversation for Beginners**

SPAN 1070 is a beginner's Spanish class designed to help a variety of medical personnel and students, who don't have a previous knowledge of the Spanish language, to improve their communication with their Spanish speaking patients or clients. It involves learning and practicing basic and essential conversation such as greetings, asking information during medical visits or emergency care, giving recommendations, speaking about medical records and other health related issues. The class requires weekly practice of fundamental medical interviews in Spanish, while improving general fluency and cultural competence **Semester Hours:** 3 to 3

### **SPAN 1111 - First Year Seminar**

Restriction: Restricted to Freshman level students. Term offered: fall. Repeatable. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **SPAN 2110 - Second Year Spanish I**

Continues the development of skills acquired in 1010 and 1020. Readings deal with Hispanic culture and current topics from Spain and Latin America. Development of informal oral and written expression. Note: Students may not enroll in any lower division (1000/2000) language skills course in which their level of proficiency exceeds that of the course. Students placing into a course through any means other than following the regular sequence must consult with an appropriate faculty member of the Dept. of Modern Languages prior to enrollment. Note: This course assumes that students have passed SPAN 1020 or equivalent, or have taken two years of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 1020 is recommended for success in this course. This course is not intended for native speakers. Term offered: fall, spring, summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 2120 - Second Year Spanish II**

Continues the development of skills acquired in SPAN 1010, 1020 and 2110, together with a review of grammar. Readings deal with Hispanic culture and literature. Development of informal oral and written expression. SPAN 2120 satisfies the fourth-semester language requirement at most graduate schools. Note: Students may not enroll in any lower division (1000/2000) language skills course in which their level of proficiency exceeds that of the course. Students placing into a course through any means other than following the regular sequence must consult with an appropriate faculty member of the Dept. of Modern Languages prior to enrollment. Note: This course assumes that students have passed SPAN 2110 or equivalent, or have taken three years of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 2110 is recommended for success in this course. This course is not intended for native speakers. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SPAN 2995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Term offered: summer. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 1 to 15

## **SPAN 3010 - Spanish Composition I**

Expansion and reinforcement of oral and written skills in Spanish at an advanced level, in a broad cultural context. Oral activities are individual and in groups. Topics are introduced through oral activities, and are then used for written assignments. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Note: This course assumes that students have passed SPAN 2120 or 2130 or equivalent, or have taken four years of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 2120 or 2130 is recommended for success in this course. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SPAN 3020 - Spanish Composition II**

(Continuation of SPAN 3010.) Development of oral and written skills in Spanish in preparation for taking other advanced courses. Topics of increasing complexity are selected from current publications in Spanish. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Note: This course assumes that students have passed SPAN 2120 or equivalent, or have taken four years of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 2120 is recommended for success in this course. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SPAN 3025 - Writing for Latinos**

Writing class for students who grew up speaking Spanish, especially those who grew up in the United States. Focuses on different types of formal writing, spelling, difficult grammar points and writing as a process. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SPAN 3030 - Spanish Oral Proficiency**

This course is designed to help students acquire an "Intermediate High" level of proficiency in speaking and understanding spoken Spanish. Content-based instruction in small groups. Note: This course assumes that students have passed SPAN 2120 or equivalent, or have taken four years of high school Spanish, or possess equivalent proficiency. This course is not intended for heritage Spanish speakers. A grade of C- or higher in SPAN 2120 is recommended for success in this course. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SPAN 3060 - Hispanic Phonetics: Theory and Practice**

Explores the phonetics of spoken Spanish throughout the world. Theoretical content: classification of all Spanish sounds and how they are affected and change according to their phonetic environment and region. Practical features: pronunciation and strategies teaching English speakers to pronounce Spanish. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Note: This course assumes that students have passed SPAN 2120 or equivalent, or have taken four years of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 2120 is recommended for success in this course. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 3101 - Introduction to the Study of Literature**

The basic terms and skills needed to analyze both the themes and form of literary works, together with an introduction to research skills. All literary examples come from Hispanic literature. Note: SPAN 3252 is a prerequisite (previous or concurrent) to all other literature courses taught in Spanish. Note: This course assumes that students have passed SPAN 2120 or 2130 or equivalent, or have taken four years of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 2120 or 2130 is recommended for success in this course. This course is a prerequisite/corequisite for all other literature courses taught in Spanish. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 3213 - Contemporary Latin American Culture and Institutions**

Introduction to contemporary Latin American culture and institutions, with emphasis on the social, economic and political institutions of Spanish-speaking countries. Note: This course assumes that students have passed SPAN 2120 or 2130 or equivalent, or have taken four years of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 2120 or 2130 is recommended for success in this course. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 3223 - Contemporary Spanish Culture and Institutions**

A study of contemporary Iberian culture, including an emphasis on modern business institutions and practices. This course can be applied to any Spanish major track but is specifically required for the International Language and Culture for the Professions track. Note: This course assumes that students have passed SPAN 2120 or 2130 or equivalent, or have taken four years of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 2120 or 2130 is recommended for success in this course. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 3225 - Special Topics In Hispanic Culture**

Variable topics in advanced studies in Spanish and Latin American culture. Note: This course assumes that students have passed SPAN 2120 or 2130 or equivalent, or have taken four years

of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 2120 or 2130 is recommended for success in this course. Term offered: spring, fall. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **SPAN 3230 - Ibero-American Cultures through Film**

A study of the Ibero-American cultures through their most representative films. Films will be windows to access the complexities and the contradictions lived in Ibero-American countries regarding a set of contemporary issues, such as violence, linguistic diversity, religious beliefs, sexuality, politics, history, social class, and globalization. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Note: This course assumes that students have passed SPAN 2120 or 2130 or equivalent, or have taken four years of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 2120 or 2130 is recommended for success in this course. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 3240 - Food Metaphors: Ibero-American Cuisine and Culture**

Intermediate/advanced Spanish students study interactions between Ibero-American cuisine and cultures. While improving Spanish skills, students learn how to cook Hispanic meals, study scholarly materials on food and cultures, watch films featuring meals as protagonists and read literary works of fiction and poetry. Taught in Spanish. Note: This course assumes that students have passed SPAN 2120 or 2130 or equivalent, or have taken four years of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 2120 or 2130 is recommended for success in this course. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 3270 - Bilingual Communities: Spanish as a Language of Contact**

Explores bilingualism by tracing the series of linguistic and ethnic contacts that converted Castilian from a Latin dialect to the language of the Spanish empire, the primary language of Latin America, and a fast-growing language in the United States. Note: This course assumes that students have passed SPAN 2120 or equivalent, or have taken four years of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 2120 is recommended for success in this course. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 3700 - Spanish for International Business I**

Development of proficiency in oral and written Spanish as used in business and industry throughout the Hispanic world, together with an increased awareness of social, economic, and political conditions affecting business transactions, particularly in long-term operations. Note: This course assumes that students have passed SPAN 2120 or equivalent, or have taken four years of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN

2120 is recommended for success in this course. Term offered: fall. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **SPAN 3710 - Spanish for International Business II**

(Continuation of SPAN 3700.) Further development of oral and written language proficiency, together with further examination of pertinent social, economic, and political conditions of the Hispanic world. Note: This course assumes that students have passed SPAN 2120 or equivalent, or have taken four years of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 2120 is recommended for success in this course. SPAN 3700 desirable. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 3730 - Special Topics in Spanish for the Professions**

Variable topics in Spanish for the Professions not otherwise covered in regular course offerings. Note: May be taken more than once, provided that the topic is different each time. Note: This course assumes that students have passed SPAN 2120 or equivalent, or have taken four years of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 2120 is recommended for success in this course. Term offered: spring, fall. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 3 to 3

### **SPAN 3740 - Spanish for the Healthcare Professions I**

This course seeks to enhance the communication between healthcare professionals and their Spanish speaking patients or clients. It entails practice of the medical interview while improving linguistic and intercultural competence. Note: SPAN 2120 or proficiency in Spanish equivalent to a fourth semester of college-level coursework is strongly recommended for optimal student success. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 3750 - Spanish for the Healthcare Professions II**

SPAN 3750 is a continuation of SPAN 3740. Students will continue to enhance the communication between healthcare professionals and their Spanish speaking patients or clients. It entails practice of the medical interview while improving linguistic and intercultural competence. Note: SPAN 2120 or proficiency in Spanish equivalent to a fourth semester of collegelevel coursework is strongly recommended for optimal student success. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 3782 - Introduction to Translation I**

The first course in a two-semester sequence that introduces the methodology and practice of written translation. Thorough analysis of source texts precedes translation into target language. Students must demonstrate third-year competence in Spanish and advanced writing skills in English. Note: This course may count for the International Studies major or minor. See your

INTS advisor for more information. Note: This course assumes that students have passed SPAN 2120 or equivalent, or have taken four years of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 2120 is recommended for success in this course. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 3792 - Introduction to Translation II**

Second course in a two-semester sequence (see SPAN 3782). Note: This course assumes that students have passed SPAN 2120 or equivalent, or have taken four years of high school Spanish, or possess equivalent proficiency. A grade of C- or higher in SPAN 2120 is recommended for success in this course. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 3840 - Independent Study: SPAN**

Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **SPAN 3939 - Internship**

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Note: students must work with the Experiential Learning Center advising to complete a course contract and gain approval. Prereq: Junior standing. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **SPAN 3995 - Global Study Topics**

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Term offered: summer. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 1 to 15

### **SPAN 4010 - History of the Spanish Language**

Studies the history of the Spanish language, both internal and external, from the language's Latin roots to the present. Historical phonetics are emphasized, though all features of the language are discussed. Prereq or Coreq: SPAN 3060. Cross-listed with SPAN 5010. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4020 - Spanish Sociolinguistics**

Studies the Spanish language in its social context. In addition to specific regional linguistic features, social factors such as geography, social class, politics, race, gender, economics, education and history are discussed as determiners of the linguistic landscape. Note: This

course may count for the International Studies major or minor. See your INTS advisor for more information. Prereq or Coreq: SPAN 3060. Cross-listed with SPAN 5020. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4030 - The Learning and Teaching of Heritage Speakers**

Studies Spanish heritage speakers, including characteristics of how they learn and how best to teach them. Includes definitions of heritage speakers, strengths and weaknesses in learning Spanish, and attitudes of and towards heritage speakers in the classroom. Prereq: SPAN 3060 with a C? or higher. Cross-listed with SPAN 5030. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4040 - Spanish Classroom Methods and Practice**

Focuses on the second language learning and teaching of Spanish in a classroom context. Looks at topics including second language vocabulary, pronunciation, grammar, and types of feedback. Practical component of activity design and learning/teaching strategies. Prereq: SPAN 3060 with a C? or higher. Cross-listed with SPAN 5040. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4060 - Dialects of the Spanish-Speaking World**

Studies the geography of the Spanish language in those countries where it is spoken as a primary language. Includes a comparison of dialect features and a study of factors that contribute to the diversity of the Spanish language. Prereq or Coreq: SPAN 3060. Cross-listed with SPAN 5060. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4070 - Spanish Applied Linguistics & Second Language Acquisition**

This course is a survey of various areas of the field of linguistics in general (e.g. morphology, syntax, semantics, pragmatics, etc.) as well as specific aspects of the structure (and acquisition) of the Spanish language. Prereq or Coreq: SPAN 3060. Cross-listed with SPAN 5070. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4076 - Spanish in Colorado**

A study of the Spanish language in its social context in Colorado and New Mexico. We will study historical factors as well as current social factors that contribute to the use of the Spanish language in this region. Prereq or Coreq: SPAN 3060. Cross-listed with SPAN 5076. Term offered: summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4080 - Spanish in the United States**

A study of the Spanish language in its social context as a language of the United States. In addition to studying bilingualism and language traits, factors such as race, gender, class, education, nationality, age, generation and language attitudes are considered. Prereq or Coreq: SPAN 3060. Cross-listed with SPAN 5080. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4099 - Special Topics in Linguistics**

Varying topics in Hispanic language and literature not otherwise covered by regular courses. Note: May be taken more than once provided that the topics are different each time. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Prereq or Coreq: SPAN 3060. Cross-listed with SPAN 5099. Term offered: spring, fall. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **SPAN 4110 - Contemporary Spanish Literature**

Major works published since the Spanish Civil War, which ended in 1939. Prereq or Coreq: SPAN 3101. Cross-listed with SPAN 5110. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4130 - Medieval Spanish Literature**

Examines Spanish literature from the jarchas and the Cid through the Celestina in the context of the reconquest. Considers the construction of the Christian knight as a hero and the corresponding representations of women, Jews and Muslims. Prereq or Coreq: SPAN 3101. Cross-listed with SPAN 5130. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4150 - Masterpieces of Spanish Literature**

The most enduring works in the literature of Spain across the centuries. Prereq or Coreq: SPAN 3101. Cross-listed with SPAN 5150. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4170 - Golden Age Drama**

Spanish drama of the 16th and 17th centuries, the period of greatest dramatic productivity in the nation's history. Readings include selections from Lope de Vega, Tirso de Molina, Calderon de La Barca, and others. Prereq or Coreq: SPAN 3101. Cross-listed with SPAN 5170. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4320 - Interculturalism and Transnationalism in Modern Spain**



Students will examine experiences of Spaniards living in different parts of the world and the circumstances of either foreigners or migrants living in Spain, through their visual and literary texts, film, photographs, documentaries and other products of current popular culture, such as contemporary television. Prereq or Coreq: SPAN 3101. Cross-listed with SPAN 5320. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4330 - Modern Culture of Spain through Film and Narrative**

Culture of modern Spain studied through Spanish film. The death of military dictator Francisco Franco opened the process for the recuperation of a usurped democratic, representational system that has become the basis of a cultural and economic resurgence. Taught in Spanish. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Prereq or Coreq: SPAN 3101. Cross-listed with SPAN 5330. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4350 - Don Quijote**

The complete Don Quijote in Spanish, focusing on its historical, social, and philosophic context, and its role in the emergence of the modern novel. Prereq or Coreq: SPAN 3101. Cross-listed with SPAN 5350. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4360 - Women and the Spanish Civil War**

Focuses on the role of Spanish women during the Second Republic, the Civil War, the dark & starving postwar, & the inescapable exile that was a consequence of the conflict. Discusses several texts & films that portray this silenced odyssey, as well as historical, ideological & cultural documents of critical value & significance. Cross-listed with SPAN 5360. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4399 - Special Topics: Spanish Peninsular Literature**

Varying topics in Spanish Peninsular Literature not otherwise covered by regular courses. Note: May be taken more than once, provided that the topic is different each time. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Prereq or Coreq: SPAN 3101. Term offered: spring, fall. Repeatable. Max Hours: 6 hours. **Semester Hours:** 3 to 3

### **SPAN 4450 - Masterpieces of Spanish-American Literature**

Focuses on a limited number of outstanding works in Spanish-American literature across the centuries. Prereq or Coreq: SPAN 3101. Cross-listed with SPAN 5450. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4501 - Borges: An Introduction to His Labyrinths**

The works of Jorge Luis Borges (short stories, essays, poetry, translations, essays anthologies, lectures) will be studied with the goals of teaching students to think globally as well as critically about literature and other cultures. Prereq or Coreq: SPAN 3101. Cross-listed with SPAN 5501. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4512 - Contemporary Argentine Short Stories**

The short stories by extraordinary Argentine writers, such as Jorges Luis Borges, Silvina Ocampo, Julio Cortazar, Griselda Gambaro, Adolfo Bioy Casares, and Manuel Muica Laineza, among others, will be studied with the goals of teaching students to think globally as well as critically about literature and other cultures. Prereq or Coreq: SPAN 3101. Cross-listed with SPAN 5512. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4521 - Mexican Literature I: pre-Columbian and Colonial**

Survey of Mexican literature and culture from pre-Columbian times to the colonial era. Prereq or Coreq: SPAN 3101. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Cross-listed with SPAN 5521. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4522 - Mexican Literature II: 19th to 21st Centuries**

Survey of Mexican literature and culture from the early modern to contemporary literature. Prereq or Coreq: SPAN 3101. Cross-listed with SPAN 5522. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4541 - Unexpected Lives: Ibero-American Queer Cinema**

Provocative films, by courageous Ibero-American filmmakers, on controversial topics (homosexuality, Lesbianism, bisexuality, transgender individuals, feminism, etc.) will be studied to teach students to think globally as well as critically about LGBTQ individuals in the context of Ibero-American cultures. Prereq or Coreq: SPAN 3101. Cross-listed with SPAN 5541. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4550 - Garcia Marquez: Words of Magic**

The works of Gabriel Garcia Marquez (stories, short novels, novels, newspaper articles, interviews, lectures) will be studied with the goals of teaching students to think globally as well as critically about literature and other cultures. Prereq or Coreq: SPAN 3101. Cross-listed with SPAN 5550. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4590 - Ibero-American Thought**

The course examines philosophical works by essayists, literary critics, and cultural thinkers from Spanish-American countries and the Iberian Peninsula. Besides reading philosophical works in their original form, students will read scholarly commentaries to deepen their understanding of those works. Prereq or Coreq: SPAN 3101. Cross-listed with SPAN 5590. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4599 - Special Topics: Latin American Literature**

Varying topics in Latin American literature not otherwise covered by regular courses. Note: May be taken more than once, provided that the topic is different each time. Prereq or Coreq: SPAN 3101. Term offered: spring, fall. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **SPAN 4690 - Methods of Teaching Modern Languages**

Studies the methods and practices of teaching modern languages. Note: requirement for language majors in the teacher certification program, School of Education, CU Denver. Note: This course is taught in English and does not fulfill the foreign language proficiency requirement for the College of Liberal Arts and Sciences. Cross-listed with MLNG 4690, MLNG 5690, SPAN 5690, FREN 4690, FREN 5690, GRMN 4690, GRMN 5690, CHIN 4690, CHIN 5690. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 4840 - Independent Study: SPAN**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **SPAN 4970 - Special Topics in Literature**

Varying topics in Hispanic literature not otherwise covered by regular courses. Note: May be taken more than once, provided that the topic is different each time. Prereq or Coreq: SPAN 3101. Cross-listed with SPAN 5970. Term offered: spring, fall. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **SPAN 5000 - Introduction to Graduate Studies in Spanish**

Introduces critical methodologies and critical perspectives of practices of signification such as literature and film, among others, in the context of culture and history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5010 - History of the Spanish Language**

Studies the history of the Spanish language, both internal and external, from the language's Latin roots to the present. Historical phonetics are emphasized, though all features of the

language are discussed. Prereq: Graduate standing. Cross-listed with SPAN 4010. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5020 - Spanish Sociolinguistics**

Studies the Spanish language in its social context. In addition to specific regional linguistic features, social factors such as geography, social class, politics, race, gender, economics, education and history are discussed as determiners of the linguistic landscape. Prereq: Graduate standing. Cross-listed with SPAN 4020. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5030 - The Learning and Teaching of Heritage Speakers**

Studies Spanish heritage speakers, including characteristics of how they learn and how best to teach them. Includes definitions of heritage speakers, strengths and weaknesses in learning Spanish, and attitudes of and towards heritage speakers in the classroom. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SPAN 4030. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5040 - Spanish Classroom Methods and Practice**

Focuses on the second language learning and teaching of Spanish in a classroom context. Looks at topics including second language vocabulary, pronunciation, grammar, and types of feedback. Practical component of activity design and learning/teaching strategies. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SPAN 4040. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5060 - Dialects of the Spanish-Speaking World**

Studies the geography of the Spanish language in those countries where it is spoken as a primary language. Includes a comparison of dialect features and a study of factors that contribute to the diversity of the Spanish language. Prereq: Graduate standing. Cross-listed with SPAN 4060. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5070 - Spanish Applied Linguistics & Second Language Acquisition**

This course is a survey of various areas of the field of linguistics in general (e.g. morphology, syntax, semantics, pragmatics, etc.) as well as specific aspects of the structure (and acquisition) of the Spanish language. Prereq: Graduate standing. Cross-listed with SPAN 4070. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5076 - Spanish in Colorado**

A study of the Spanish language in its social context in Colorado and New Mexico. We will study historical factors as well as current social factors that contribute to the use of the Spanish language in this region. Prereq: Graduate standing. Cross-listed with SPAN 4076. Term offered: summer. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5080 - Spanish in the United States**

A study of the Spanish language in its social context as a language of the United States. In addition to studying bilingualism and language traits, factors such as race, gender, class, education, nationality, age, generation and language attitudes are considered. Prereq: Graduate standing. Cross-listed with SPAN 4080. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5099 - Special Topics in Linguistics**

Varying topics in Hispanic language and literature not otherwise covered by regular courses. Note: May be taken more than once provided that the topics are different each time. Prereq: graduate standing. Cross-listed with SPAN 4099. Term offered: spring, fall. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **SPAN 5110 - Contemporary Spanish Literature**

Major works published since the Spanish Civil War, which ended in 1939. Prereq: Graduate standing. Cross-listed with SPAN 4110. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5130 - Medieval Spanish Literature**

Examines Spanish literature from the jarchas and the Cid through the Celestina in the context of the reconquest. Considers the construction of the Christian knight as a hero and the corresponding representations of women, Jews and Muslims. Prereq: Graduate standing. Cross-listed with SPAN 4130. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5150 - Masterpieces of Spanish Literature**

The most enduring works in the literature of Spain across the centuries. Prereq: Graduate standing. Cross-listed with SPAN 4150. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5170 - Golden Age Drama**

Spanish drama of the 16th and 17th centuries, the period of greatest dramatic productivity in the nation's history. Readings include selections from Lope de Vega, Tirso de Molina, Calderon

de La Barca, and others. Prereq: graduate standing. Cross-listed with SPAN 4170. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5180 - Modernism**

Examines the first real flowering of Spanish American literature, from about 1880 to 1910. The dominant genres of the period were the short story, the essay, and lyric poetry. Readings come from Dario, Jose Enrique Rodo, Manuel Gutierrez Najera, Manuel Diaz Rodriquez and others. Prereq: graduate standing. Cross-listed with SPAN 4180. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5190 - Nineteenth-Century Spanish Novel**

The Spanish novel in one of its most productive periods, beginning with romanticism and carrying through the realist and naturalist movements. Prereq: graduate standing. Cross-listed with SPAN 4190. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5300 - Generation of 1898**

Spanish literature from around the turn of the century through the first third of the 20th century, reflecting the deep intellectual and cultural foment occasioned in part by Spain's loss of the Spanish-American War of 1898. Prereq: Graduate standing. Cross-listed with SPAN 4300. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5320 - Interculturalism and Transnationalism in Modern Spain**

Students will examine experiences of Spaniards living in different parts of the world and the circumstances of either foreigners or migrants living in Spain, through their visual and literary texts, film, photographs, documentaries and other products of current popular culture, such as contemporary television. Prereq: Graduate standing. Cross-listed with SPAN 4320. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5330 - Modern Culture of Spain through Film and Narrative**

Culture of modern Spain studied through Spanish film. The death of military dictator Francisco Franco opened the process for the recuperation of a usurped democratic, representational system that has become the basis of a cultural and economic resurgence. Taught in Spanish. Prereq: graduate standing. Cross-listed with SPAN 4330. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5340 - Race, Class, and Gender in Spanish Golden Age Literature**

Explores works of various genres in relation to their social and political contexts in 16th and 17th century Spain, emphasizing the cultural attitudes toward race, class, and gender that

inform them. Prereq: graduate standing. Cross-listed with SPAN 4340 and WGST 4540/5540. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5350 - Don Quijote**

The complete Don Quijote in Spanish, focusing on its historical, social, and philosophic context, and its role in the emergence of the modern novel. Prereq: graduate standing. Cross-listed with SPAN 4350. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5360 - Women and the Spanish Civil War**

Focuses on the role of Spanish women during the Second Republic, the Civil War, the dark & starving postwar, & the inescapable exile that was a consequence of the conflict. Discusses several texts & films that portray this silenced odyssey, as well as historical, ideological & cultural documents of critical value & significance. Cross-listed with SPAN 4360. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5380 - Romanticism in Spain**

The romantic movement in 19th century Spain through plays, poems, essays. Prereq: graduate standing. Cross-listed with SPAN 4380. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5399 - Special Topics: Spanish Peninsular Literature**

Varying topics in Spanish peninsular literature not otherwise covered by regular courses. Note: May be taken more than once, provided that the topic is different each time. Prereq: graduate standing. Term offered: spring, fall. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **SPAN 5401 - Survey of Spanish-American Literature I: Pre-1898**

The most important works in the literature of Spanish America from the Colonial Period to the Late 19th Century. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SPAN 4401. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5411 - Contemporary Spanish-American Novel**

The novel in Spanish America since the Second World War, the period in which the greatest number and quality of works has been produced. Prereq: graduate standing. Cross-listed with SPAN 4411. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5450 - Masterpieces of Spanish-American Literature**

Focuses on a limited number of outstanding works in Spanish-American literature across the centuries. Prereq: graduate standing. Cross-listed with SPAN 4450. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5501 - Borges: An Introduction to His Labyrinths**

The works of Jorge Luis Borges (short stories, essays, poetry, translations, essays anthologies, lectures) will be studied with the goals of teaching students to think globally as well as critically about literature and other cultures. Prereq: graduate standing. Cross-listed with SPAN 4501. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5512 - Contemporary Argentine Short Stories**

The short stories by extraordinary Argentine writers, such as Jorge Luis Borges, Silvina Ocampo, Julio Cortazar, Griselda Gambaro, Adolfo Bioy Casares, and Manuel Muica Laineza, among others, will be studied with the goals of teaching students to think globally as well as critically about literature and other cultures. Prereq: graduate standing. Cross-listed with SPAN 4512. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5521 - Mexican Literature I: pre-Columbian and Colonial**

Survey of Mexican literature and culture from pre-Columbian times to the colonial era. Prereq: graduate standing. Cross-listed with SPAN 4521. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5522 - Mexican Literature II: 19th to 21st Centuries**

Survey of Mexican literature and culture from the early modern to contemporary literature. Prereq: graduate standing. Cross-listed with SPAN 4522. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5525 - Orientalisms In The Hispanic Traditions**

Advanced studies of orientalism in the Hispanic tradition: the Hispano-Arabic cultural heritage in Early Medieval Spain and in contemporary Hispanic cultures, as well as the influence of other eastern religions and cultures, such as Judaism or Buddhism. Prereq: graduate standing. Cross-listed with SPAN 4525. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5541 - Unexpected Lives: Ibero-American Queer Cinema**

Provocative films, by courageous Ibero-American filmmakers, on controversial topics (homosexuality, Lesbianism, bisexuality, transgender individuals, feminism, etc.) will be studied to teach students to think globally as well as critically about LGBTQ individuals in the



context of Ibero-American cultures. Prereq: graduate standing. Cross-listed with SPAN 4541. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5550 - Garcia Marquez: Words of Magic**

The works of Gabriel Garcia Marquez (stories, short novels, novels, newspaper articles, interviews, lectures) will be studied with the goals of teaching students to think globally as well as critically about literature and other cultures. Prereq: graduate standing. Cross-listed with SPAN 4550. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5590 - Ibero-American Thought**

The course examines philosophical works by essayists, literary critics, and cultural thinkers from Spanish-American countries and the Iberian Peninsula. Besides reading philosophical works in their original form, students will read scholarly commentaries to deepen their understanding of those works. Prereq: graduate standing. Cross-listed with SPAN 4590. Term offered: spring, fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5599 - Special Topics: Latin American Literature**

Varying topics in Latin American literature not otherwise covered by regular courses. Note: May be taken more than once, provided that the topic is different each time. Prereq: graduate standing. Term offered: spring, fall. Repeatable. Max Hours: 6 hours. **Semester Hours:** 3 to 3

### **SPAN 5600 - Seminar in Spanish Creative Writing: Poetry and Short Fiction**

A capstone writing course. Semester writing project will be collected poems and short stories. Prereq: graduate standing. Cross-listed with SPAN 4600. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5690 - Methods of Teaching Modern Languages**

Studies the methods and practices of teaching modern languages. Note: requirement for those wishing to be teaching assistants in the Department of Modern Languages, and for language majors in the teacher certification program, School of Education, CU Denver. This course is taught in English and does not fulfill the foreign language proficiency requirement for the College of Liberal Arts and Sciences. Cross-listed with MLNG 4690, MLNG 5690, SPAN 4690, FREN 4690, FREN 5690, GRMN 4690, GRMN 5690, CHIN 4690, CHIN 5690. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5691 - Methods of Teaching Modern Languages II**

A continuation of the study of modern language teaching methods. This second course has an emphasis on experiential learning through individual teaching demonstrations, class

observations, as well as team teaching with experienced instructors. Cross-listed with MLNG 4691, MLNG 5691, SPAN 4691, FREN 4691, FREN 5691, GRMN 4691, GRMN 5691, CHIN 4691, CHIN 5691. Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690. Term offered: spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPAN 5840 - Independent Study: SPAN**

Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **SPAN 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **SPAN 5939 - Internship**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

### **SPAN 5950 - Master's Thesis**

This course is for students writing a master's thesis. It includes individual mentoring with one or more faculty members, individualized and library-based research. May also include field research. Students must consult with a faculty member before enrolling. Repeatable. Max hours: 6 Credits. **Semester Hours:** 1 to 6

### **SPAN 5970 - Special Topics in Literature**

Varying topics in Hispanic literature not otherwise covered by regular courses. Prereq: Graduate standing. Cross-listed with SPAN 4970. Term offered: spring, fall. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

## **Special Education**

### **SPED 1030 - Understanding (dis)Ability in Contemporary Classrooms**

This course provides an overview of special education by examining the history of special education, construction of dis/ability, characteristics of individuals with disabilities, aspects of disproportionality, and introduction to evidence-based instructional practices. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SPED 4010 - Intentional Interventions for Exceptional Learners**

This course provides instructional strategies and interventions for students with a wide variety of disabilities. Implications for targeted and intensive interventions and assessment are considered. Cross-listed with SPED 5010. Restriction: Professional Year Admission required. Max hours: 3 Credits **Semester Hours:** 3 to 3

## **SPED 4030 - Understanding (dis)Ability in Contemporary Classrooms**

This course provides an overview of special education by examining the history of special education, construction of dis/ability, characteristics of individuals with disabilities, aspects of disproportionality, and introduction to evidence-based instructional practices. Prereq or Coreq: EDHD3930 or ECED4933 or ECED4934. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SPED 4140 - Assessment: Inquiry, Instruction, & Intervention**

Using a variety of assessment tools, students will focus on the educational assessment methods and procedures used in decision making and program planning for students with exceptional learning needs, with attention to pervasive issues pertaining to students from culturally and linguistically diverse backgrounds. Cross-listed with SPED 5140. Restriction: Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SPED 4151 - Slashing Stigmas: Promoting Positive Behaviors**

This course works to transform perspectives and practices related to supporting student behavior in classrooms. Students will learn important considerations related to culture, race, gender and socioeconomic status, as they intersect with behavior and social emotional development. Cross-listed with SPED 5151. Restriction: Restricted to students in Education and Human Development with between 57 and 180 cumulative credit hours. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SPED 4300 - Family, Professional, and Community Collaboration**

Focuses on the development of competencies in consultation and collaboration. The overall purpose is to encourage the development of understanding and skills that enhance a teacher's ability to work and communicate effectively with school personnel, including paraprofessionals and parents. The goal of collaboration is to support and determine together the instructional scenarios that best meet the needs of students. Specific competencies include problem solving, conflict resolution, data collection or observation skills, conferencing, facilitating meetings, and interacting with others while respecting diverse discourses and multicultural backgrounds. Cross-listed with SPED 5300. Restriction: Restricted to students in Education and Human Development with between 57 and 180 cumulative credit hours. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 4400 - Universal Design for Learning (UDL)**

This course introduces Universal Design for Learning (UDL), an important educational philosophy and set of principles & techniques that focuses on strategies and tools to help ALL students by accommodating their differences in inclusive classroom settings. Cross-listed with SPED 5000. Restriction: Restricted to students in Education and Human Development with between 57 and 180 cumulative credit hours. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 4500 - Transition and Secondary Methods in Special Education**

This course provides school leaders and practitioner with an understanding of the special education transition process as specified by federal and state guidelines, as well as effective teaching and learning strategies for secondary youth with disabilities. Cross-listed with SPED 5500. Restriction: Restricted to students in Education and Human Development with between 57 and 180 cumulative credit hours, and Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 4600 - Special Education Law: Ethics and Compliance**

Designed for school leaders and professionals to understand special education law and compare and contrast service delivery options . Cross-listed with SPED 5600. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 4710 - Significant Health Support Needs Academy**

Intends to prepare paraeducators with knowledge and skills needed for working with children with significant health support needs. Consisting of seven modules of varying length, this 15 clock hour academy focuses on training both the health aid and the significant health support needs professional. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4720 - Significant Supports for Challenging Behavior Academy**

This academy provides the paraeducator with the knowledge and skills needed for working with children who have significant behavior needs. The academy focuses on working with students who have challenging behaviors. The aim is to provide paraeducators with the basic understanding of behavior support and to provide them with the necessary skills to implement written behavior support plans. It is recommended that paraeducators complete the Behavior Management Academy prior to taking this course. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4730 - Significant Communication Support Needs Academy**

This academy provides the paraeducator with the knowledge and skills needed for working with children who have significant behavior needs. The academy focuses on working with students

who have challenging behaviors. Its aim is to provide paraeducators with a basic understanding of behavior support and to provide them with the necessary skills to implement written behavior support plans. It is recommended that paraeducators complete the Behavior Management Academy prior to taking this course. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4740 - Intersections of Literacy, Culture, & Exceptionality**

This course provides a foundational understanding of the complex intersections between literacy, culture, language, learning, and students with (dis)abilities. A primary goal is to address the particular needs of culturally and linguistically diverse learners with exceptionalities, while also exploring the distinctions between language development and learning disabilities. Cross-listed with SPED 5740. Restriction: Restricted to students in Education and Human Development with between 57 and 180 cumulative credit hours. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 4750 - Orientation to Special Education**

This 15 clock hour academy is designed to provide a basic introduction to special education and the needs of students who have disabilities. It includes introductory material regarding legal and historical foundations of special education, human growth and development, the nature of disabilities, and an introduction to the basic human needs that must be addressed. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4780 - Literacy Intervention for Exceptional Learners**

Provides the practitioner with an understanding of research-validated approaches, strategies, assessment tools and issues related to effective literacy instruction for students performing significantly below grade level. Cross-listed with SPED 5780. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 4800 - Orientation to Early Intervention Services**

This academy provides Developmental Intervention Assistant (DI Assistant) an introduction to early intervention services under IDEA. Material regarding legal and historical foundations, human growth and development, and the nature of disabilities and their impact on infants and toddlers are introduced. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4805 - Fundamentals of the IFSP Process**

This academy provides Developmental Intervention Assistants an overview of the Individualized Family Service Plan (IFSP). It clarifies their role in the implementation of IFSP and also knowledge about the evaluation and assessment components of the IFSP process. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4810 - Early Intervention Teamwork**

This academy is designed for Developmental Intervention Assistants (DI Assistants) to work effectively in Early Intervention teams. Introductory materials regarding teamwork, delineation of DI Assistants 'and supervisors' roles and responsibilities as well as family centered practices are addressed. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4815 - Working with Families**

This academy provides the Developmental Intervention Assistant with information and skills to create and support Family Centered Practices. Focus on the concept of family and the impact of disability on the family is woven throughout the course. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4820 - Instructional Strategies for Early Intervention**

This academy assists the Developmental Intervention Assistant in examining the types of instructional strategies used in the Early Intervention programs. Focus is on building relationships, promoting engagement, and instructional support specifically in collecting data for the supervisor and IFSP team. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4825 - Promoting Social Emotional Development**

This academy focuses on the importance of infant/toddlers' social emotional development and support. The CSEFEL Pyramid Model, adapted for this course, is a conceptual framework of evidence-based practices addressing the promotion of social emotional development in early intervention programs. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4830 - Health Support Needs in Early Intervention**

This academy provides the DI Assistant with information and skills to support the health services related to the early intervention programs. Safety awareness and precautions are stressed as related to caring for infants/toddlers in their home and natural environments. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4835 - Language and Early Literacy Development**

This academy is designed for Developmental Intervention Assistant (DI Assistant) to work effectively with families as they support the early language and literacy development of their infants and toddlers with communication challenges. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4840 - Communication Support Needs Early Intervention**

This academy provides the Developmental Intervention Assistant with information and skills to learn characteristic language patterns for infants and toddlers. Focus on critical importance of child interactions as well as key intervention communication strategies for infants and toddlers. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4845 - Individualized Intervention Infants/Toddlers**

This academy, adapted from CSEFEL, introduces Developmental Intervention Assistants (DI Assistants) to basic knowledge of infants/toddlers with challenging behaviors. It provides necessary skills to implement written behavior support plans based on the IFSP under the supervision of Early Intervention professionals. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4850 - Transition to Age 3**

This academy assists the Developmental Intervention Assistant in learning the elements of transition from Part C to Part B including the difference between an IFSP and IEP. Focus on the cultural and transition issues for the toddler and the family. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4855 - Interpersonal Skills for DI Assistants**

This academy provides the Developmental Intervention Assistant effective interpersonal skills necessary to work with Early Intervention teams. It addresses issues of diversity based on culture, experience, gender, etc. and examines the DI Assistants' roles in each aspect of the topics. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4860 - Personal Growth Development for DI Assistants**

This academy provides the Developmental Intervention Assistant with information and skills to identify and expand personal growth and improvement skills working in Early Intervention programs. The course covers stress-management strategies and uses creativity and flexibility in dealing with problematic situations. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4865 - Instructional & Assistive Technology in EI**

This academy assists the Developmental Intervention Assistants in examining various types of instructional and assistive technology used in early intervention programs. Focus is on technology used in the home and other natural environments to assist the infant/toddler and the family. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **SPED 4870 - Autism Spectrum Disorder in Early Intervention**

This academy provides Developmental Intervention Assistants with information to assist the Early Intervention Professionals to implement instructions for infants/toddlers identified with

autism. It offers participants knowledge of structured tasks environmental adaptations, and appropriate social skills for the infant/toddler and family. Max hours: 1 Credit. **Semester Hours: 1 to 1**

### **SPED 4910 - Special Education Generalist Internship and Site Seminar I**

Special education teacher candidates engage in systematic observation of, participation in, design of and reflection on inclusive curricular, instruction and management practices. Graduated learning activities for each internship and time requirements are specified in the School Internship handbook and the Special Education Guidelines. In partner school, the site coordinator and site professor are responsible for coaching, supervision and site seminars. In internship outside partner school settings, cooperating teachers, district coordinators and/or university professors work with teacher candidates in the classroom and in seminars. Prereq: Completion of special education core or permission of instructor and advisor. Admission into the IPTE Program. Cross-listed with SPED 5910. Repeatable. Max Hours: 8 Credits. **Semester Hours: 1 to 8**

### **SPED 4915 - Practicum For Developmental Intervention Assistant**

The Developmental Intervention Assistant will engage in systematic observation of, and participation in the delivery of early intervention services. Practicum Instructor will observe, coach and assess as per the performance criteria required for completing the DI Assistant portfolio. Prereq: SPED 4800, 4805, 4810, 4815, 4820, 4825, 4830, 4835, 4840, 4845, 4850, 4855, 4860, 4865, & 4870. Repeatable. Max Hours: 9 Credits. **Semester Hours: 2 to 2**

### **SPED 4919 - CO-TOP Practicum**

The paraeducator engage in systematic observation of, and participation in instruction of management practices. The learning activities for each practicum are specified in the CO-TOP Practicum handbook and information sheet. Cooperating teachers, district coordinators and/or university-based supervision observe paraeducators in the classroom. Prereq: Completion of CO-TOP academies or permission of the CO-TOP Coordinator. Max hours: 2 Credits. **Semester Hours: 1 to 2**

### **SPED 4931 - Internship & Learning Community I**

SPED 4931 is the first internship in a series of three completed during the professional year of the SPED program providing the necessary learning opportunities for candidates to gradually develop their practice to be licensed as a special education teacher. Restriction: Professional Year Admission required. Max hours: 2 Credits. **Semester Hours: 2 to 2**

### **SPED 4932 - Internship & Learning Community II**



SPED 4932 is the second internship in a series of three completed during the professional year of the SPED program providing the necessary learning opportunities for candidates to gradually develop their practice to be licensed as a special education teacher. Restriction: Professional Year Admission required. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **SPED 4933 - Internship & Learning Community III**

SPED 4933 is the final internship in a series of three completed during the professional year of the SPED program providing the necessary learning opportunities for candidates to gradually develop their practice to be licensed as a special education teacher. Restriction: Professional Year Admission required. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **SPED 5000 - Universal Design for Learning (UDL)**

This course introduces Universal Design for Learning (UDL), an important educational philosophy and set of principles & techniques that focuses on strategies and tools to help ALL students by accommodating their differences in inclusive classroom settings. Cross-listed with SPED 4400. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5010 - Intentional Interventions for Exceptional Learners**

This course provides instructional strategies and interventions for students with a wide variety of disabilities. Implications for targeted and intensive interventions and assessment are considered. Cross-listed with SPED 4010. Max hours: 3 Credits **Semester Hours:** 3 to 3

### **SPED 5030 - Understanding (dis)Ability in Contemporary Classrooms**

This course provides an overview of special education by examining the history of special education, construction of dis/ability, characteristics of individuals with disabilities, aspects of disproportionality, and introduction to evidence-based instructional practices. Cross-listed with SPED 4030. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5050 - Assessment & Advocacy for Multilingual Learners**

Students learn to gather and use assessment results within a strengths-based framework to advocate for appropriate programming, placement, instruction, and ongoing progress monitoring of multilingual students. Special attention is paid to linguistic and cultural bias in the field of assessment. Cross-listed with CLDE 5050. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5120 - Negotiating The Special Education Teaching Process**

This course explores both theoretical and practical aspects of educating students with special needs. Students will examine the nature of disability, the history and legal basis for special

education programming in American schools, as well as contemporary law governing the education of persons with disabilities. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5140 - Assessment: Inquiry, Instruction, & Intervention**

Using a variety of assessment tools, students will focus on the educational assessment methods and procedures used in decision making and program planning for students with exceptional learning needs, with attention to pervasive issues pertaining to students from culturally and linguistically diverse backgrounds. Cross-listed with SPED 4140. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **SPED 5151 - Slashing Stigmas: Promoting Positive Behaviors**

This course works to transform perspectives and practices related to supporting student behavior in classrooms. Students will learn important considerations related to culture, race, gender and socioeconomic status, as they intersect with behavior and social emotional development. Cross-listed with SPED 4151. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5210 - Foundations for Understanding Behavior**

This course is designed to provide a foundational understanding of behaviors commonly witnessed in the classroom. It will provide strategies for assessment and guidance on legal processes which guide the development of individualized education and behavior plans. Specialize instructional methods and current events impacting the social emotional educations of students will also be discussed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5300 - Family, Professional, and Community Collaboration**

Focuses on the development of competencies in consultation and collaboration. The overall purpose is to encourage the development of understanding and skills that enhance a teacher's ability to work and communicate effectively with school personnel, including paraprofessionals and parents. The goal of collaboration is to support and determine together the instructional scenarios that best meet the needs of students. Specific competencies include problem solving, conflict resolution, data collection or observation skills, conferencing, facilitating meetings, and interacting with others while respecting diverse discourses and multicultural backgrounds. Cross-listed with SPED 4300. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5401 - Advanced Seminar in Special Education**

Designed to allow an opportunity for special educators to compare and contrast the service delivery, funding mechanisms, professional ethics, and underlying assumptions of special and regular education. Trends in the field of special education are examined through review of current research. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **SPED 5440 - Ethics and Implementation ABA**

This course is designed to teach you ethical and professional conduct considerations in applied behavior analysis. We will review behavior change systems and implementation issues in the conduct of applied behavior analysis. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5450 - Introduction to ABA and Terminology**

This course will introduce the history and basics of ABA with a focus on its related terminology. In addition, ABA benefits will be discussed, and emphasis placed on ethical considerations required for practicing ABA as a board Certified Behavior Analyst. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5460 - ABA Practical Applications**

This course will provide a framework for the natural science of behavior. It will provide students with a systematic approach to understanding and precisely describing the behavior of individuals, and its relationship to environmental determinants. Prereq: SPED 5450. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5470 - ABA Data**

This course will introduce how to collect and interpret different types of data, and the importance of making data-driven decisions for behavior change procedures based on functional relationships. Prereq: SPED 5450, 5460. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5480 - ABA Advanced Data and Behavioral Plans and Applications**

Student will learn to use standard celeration charts and make data-driven decisions to write appropriate behavioral plans. They will also learn to use ABA strategies to enhance communication, to support individuals with ASD, and to benefit from systems supports. Prereq: SPED 5450, 5460, 5470. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5490 - Autism In Early Intervention**

This course will provide students with the knowledge necessary to implement recommended, evidence-based practices with young children with autism. The course will provide information on the etiology of autism, diagnostic procedures, evidence-based practices, and how to support families who have a young child diagnosed on the spectrum. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5500 - Transition and Secondary Methods in Special Education**

This course provides school leaders and practitioner with an understanding of the special education transition process as specified by federal and state guidelines, as well as effective teaching and learning strategies for secondary youth with disabilities. Cross-listed with SPED 4500. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5530 - Language & Literacy Acquisition Div Lrn**

This course investigates the relationship between language and literacy acquisition. In the context of first and second language acquisition across the lifespan, the course focuses on bilingual and second language development, and on the acquisition of literacy by young children. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5600 - Special Education Law: Ethics and Compliance**

Designed for school leaders and professionals to understand special education law and compare and contrast service delivery options . Cross-listed with SPED 4600. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **SPED 5740 - Intersections of Literacy, Culture, & Exceptionality**

This course provides a foundational understanding of the complex intersections between literacy, culture, language, learning, and students with (dis)abilities. A primary goal is to address the particular needs of culturally and linguistically diverse learners with exceptionalities, while also exploring the distinctions between language development and learning disabilities. Cross-listed with SPED 4740. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5780 - Literacy Intervention for Exceptional Learners**

Provides the practitioner with an understanding of research-validated approaches, strategies, assessment tools and issues related to effective literacy instruction for students performing significantly below grade level. Practitioners can expect to be able to conduct thorough literacy assessments as well as be able to develop, implement, and evaluate individual reading and writing programs for individual students with the most challenging literacy needs. Cross-listed with SPED 4780. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SPED 5835 - Special Topics**

Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **SPED 5840 - Independent Study: SPED**

Repeatable. Max Hours: 4 Credits. **Semester Hours:** 1 to 4

### **SPED 5918 - ABA Practicum**

Supervised field experience with a Board Certified Behavior Analyst for time spent directly working with individuals who require behavioral programming. Students must complete 1000 hours to meet BCBA requirements and 670 hours for BCaBA requirements. 100 hours is equivalent to 1 credit. Max hours: 10 Credits. **Semester Hours:** 0.5 to 4

### **SPED 5919 - ABA Intensive Practicum**

Supervised field experience with a Board Certified Behavior Analyst for time spent directly working with individuals who require behavioral support. Students must complete 750 hours to meet BCBA requirements and 500 hours for BCaBA requirements. 75 hours is equivalent to 1 credit. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 0.5 to 5

### **SPED 5930 - Special Education Generalist Internship and Site Seminar I**

Special education teacher candidates engage in systematic observation of, participation in, design of and reflection on inclusive curricular, instruction and management practices. Graduated learning activities for each internship and time requirements are specified in the School Internship handbook and the Special Education Guidelines. In partner school, the site coordinator and site professor are responsible for coaching, supervision and site seminars. In internship outside partner school settings, cooperating teachers, district coordinators and/or university professors work with teacher candidates in the classroom and in seminars. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **SPED 5931 - Special Education Generalist Internship and Site Seminar II**

Special education teacher candidates engage in systematic observation of, participation in, design of and reflection on inclusive curricular, instruction and management practices. Graduated learning activities for each internship and time requirements are specified in the School Internship handbook and the Special Education Guidelines. In partner school, the site coordinator and site professor are responsible for coaching, supervision and site seminars. In internship outside partner school settings, cooperating teachers, district coordinators and/or university professors work with teacher candidates in the classroom and in seminars. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 2 to 2

### **SPED 5932 - Special Education Generalist Internship and Site Seminar III**

Special education teacher candidates engage in systematic observation of, participation in, design of and reflection on inclusive curricular, instruction and management practices. Graduated learning activities for each internship and time requirements are specified in the School Internship handbook and the Special Education Guidelines. In partner school, the site coordinator and site professor are responsible for coaching, supervision and site seminars. In internship outside partner school settings, cooperating teachers, district coordinators and/or university professors work with teacher candidates in the classroom and in seminars. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 2 to 2

## **SPED 5933 - Special Education Generalist Internship and Site Seminar IV**

Special education teacher candidates engage in systematic observation of, participation in, design of and reflection on inclusive curricular, instruction and management practices. Graduated learning activities for each internship and time requirements are specified in the School Internship handbook and the Special Education Guidelines. In partner school, the site coordinator and site professor are responsible for coaching, supervision and site seminars. In internship outside partner school settings, cooperating teachers, district coordinators and/or university professors work with teachers, and candidates in the classroom and in seminars. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 8

## **Sustainability**

### **SUST 3010 - Sustainability: Past, Present, and Future**

This course draws on theoretical perspectives to critically analyze contemporary environmental issues across ecological, sociocultural, historical, political and economic contexts. Term offered: fall, spring. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **SUST 3840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Prereq: permission of instructor required. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **SUST 3939 - Internship**

This course will provide internships with agencies, businesses and programs involved in initiatives aimed at promoting a sustainable future. Internships could include work with concerns involved in addressing specific environmental issues or with projects aimed at raising awareness of issues related to sustainability. Prereq: Students must have junior standing and at least a 2.75 GPA and must work with Experiential Learning Center advising to complete a course contract and gain approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **SUST 4840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Prereq: permission of instructor required. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

## **SUST 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **SUST 4960 - Capstone in Sustainability**

As the culmination of the Sustainability Minor, this course examines current research practices in sustainability and sustainability-related fields. Students work in teams to complete a sustainability/sustainability-related research paper and poster and present it to the campus community. Note: Topics variable depending on region under study, student interest, and faculty specialty. Prereq: SUST 3011. Term offered: fall. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **SUST 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Max hours: 6 Credits. **Semester Hours:** 1 to 6

## **Taxation**

### **MTAX 6405 - Taxation of Property Transactions**

This course focuses on the fundamental concepts regarding the taxation of transactions involving property, including concepts such as basis of property, realization and recognition of gain or loss, effects of taxing gains and losses from capital assets, depreciable status, amortization of intangible property, depreciation methods, property casualties and losses, limitations on passive losses, and non-recognition transactions. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTAX 6415 - Employment Taxes and Related Topics**

This course explores existing employment tax risks and employment tax planning opportunities through appropriate compensation and entity structuring techniques, analyzes proper worker classification, and highlights preventive techniques to avoid personal liability. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 1 Credit. **Semester Hours:** 1 to 1

## **MTAX 6420 - Estate and Gift Taxes**

This course is an introduction to principles and practices associated with the taxation of estates, gifts, and other gratuitous transfers under Subtitle B of the Internal Revenue Code. Using relevant examples, this course also focuses on the practical aspects of completing IRS Form 706, United States Estate (and Generation-Skipping Transfer) Tax Return, and IRS Form 709, United States Gift (and Generation-Skipping Transfer) Tax Return. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MTAX 6425 - Taxation of S Corporations and Their Shareholders**

This course focuses on fundamental tax issues relating to S corporations and their shareholders arising from the formation, operation, and liquidation of S corporations. Course work includes an examination of pertinent federal income tax returns of a S corporation. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MTAX 6430 - International Taxation**

International taxation focuses on the U.S. taxation of cross-border transactions. A review of the Internal Revenue Code's basic international tax rules is covered, including residency rules, sourcing of income and expenses, taxation of in-bound transactions (FDAP and "effectively connected income" rules), overview of U.S. model tax treaty provisions, anti-deferral regimes, and foreign tax credits. Students are often required to study the tax regimes of another country to compare and contrast foreign tax laws to U.S. laws. A brief review of interest-charge domestic international sales corporations is often covered. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **MTAX 6431 - Inbound International Taxation**

An inbound transaction deals with a foreign person (e.g., a foreign individual, partnership, or corporation) doing business in the U.S. This course begins by discussing that a foreign person is taxed on two types of U.S. income: (1) FDAP (generally, investment income) and (2) effectively connected income (business income). FDAP includes a foreign person investing in marketable securities, as well as key planning issues when a foreign person invests in U.S. real estate. The effectively connected income discussion includes the branch profits tax. Planning opportunities such as avoiding U.S. income tax when a foreign person exports goods into the U.S.; choice of U.S. business entity; and structuring U.S. business entities between different foreign tax systems (world-wide taxation by the foreign country or territorial taxation by the foreign



country) are also presented. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MTAX 6432 - Outbound International Taxation**

Outbound international taxation addresses U.S. tax issues when a U.S. person (e.g., U.S. individual, partnership, or corporation) is investing or doing business abroad. For U.S. individuals working abroad, this course covers the foreign income exclusion and the housing exclusion. The foreign tax credit protects both the U.S. individual or business from double taxation, but only if correctly structured when dealing with closely held U.S. businesses. From a business perspective, the deferral aspects of a foreign corporation are covered, as well as the anti-deferral regimes of (1) a controlled foreign corporation with subpart F income and (2) the passive foreign income company (PFIC). Planning issues such as creating foreign source income, corporate reorganizations under IRC § 367 are also discussed. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTAX 6435 - Income Tax Accounting and Methods**

Topics in this course include the adoption of and change in accounting periods; income recognition and deduction allowance under the cash and accrual methods of accounting; the time value of money and original interest discount rules; prepaid and contested income and expenses; income and deduction reversals; accounting method changes; installment sales; long-term contracts; inventory accounting, including LIFO, FIFO and manufacturers' inventories; and net operating losses. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTAX 6440 - Tax Practice and Procedures**

This course provides a study of the organization, policies, and procedures of federal and state taxing authorities. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTAX 6445 - Entrepreneurs' Tax and Finance**

This course focuses on entrepreneurs and start-ups. Topics include choice of entity considerations regarding the proper business entity for conducting the new venture, tax efficient ways of raising capital, incentivizing employees, planning for retirement, and taking a successful company public. This course provides students with the tools and background to make intelligent, thoughtful decisions regarding tax and finance issues impacting the formation,

operation, funding, and expansion of entrepreneurial ventures. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTAX 6455 - Tax Aspects Relating to Exempt Organizations**

This course focuses on the statutory exemptions for "charities" and other entities organized under IRC section 501(c). It also addresses the political campaign activities, funds, and lobbying activities of political organizations and entities organized under IRC section 501(c); the "prohibited transactions" rules; private foundations; the "unrelated business income" tax; the dissolution of, and distribution of assets held by, exempt organizations; and the charitable contribution. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTAX 6460 - Advance Topics in Taxation**

This course focuses on a variety of advanced tax topics for businesses and individuals. This course is offered on an infrequent basis. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTAX 6465 - State and Local Taxation**

This course focuses on various state and local taxation issues, such as the constitutionality of certain state and local tax regimes; nexus or jurisdictional tax due process; allocation and apportionment formulae under various state and local tax regimes; business versus nonbusiness income; the multi-state tax compact; the "unitary" concept; residency definitions; nonresident income sources; sales of tangible personal property and their taxation, including the impact of sales and use taxes on selected transactions, such as interstate purchases and sales, drop shipments, purchases from and sales to state and federal governments, occasional or "casual" sales, leasing transactions, and construction and manufacturing transactions; retail and wholesale sales; valuation techniques for real and personal property for purposes of certain state and local property taxes; and administrative procedures applied by various state and local tax jurisdictions. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTAX 6470 - Professional Judgment and Ethical Decision Making in Accounting and Tax**

The content of this course includes the following: the ethical responsibilities of accountants, both personal and professional; ethical dilemmas facing accountants; ethical theory; the

various accounting codes of conduct and ethical guidance for accountants; and the application of ethical theory, codes of conduct, and professional standards. In addition, this course includes discussions on ethical considerations, mandates, and penalties germane to a tax accounting practice, with an emphasis on Treasury Department Circular No. 230; on tax penalties under IRC Code sections 6662, 6664, 6694, 6695, and 6696 as those penalties relate to taxpayers and tax return preparers; on the standards governing the issuance of tax opinions to clients, and on AICPA statements on standards for tax services. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTAX 6473 - Auditing for Taxes and Tax Fraud**

This course provides an introduction to and guidance for creation of an effective audit program for tax-based systems, with a focus on auditing tax fraud. The tax audit is designed specifically to detect potential misreporting of income and deductions and potential tax fraud. This course focuses on various methodologies that allow auditors to develop standards, objectives and procedures to examine systematically tax returns and tax strategies for misreported tax items and tax fraud. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTAX 6475 - Accounting for Income Taxes**

This course addresses financial accounting reporting standards for income taxes. Principal topics include an understanding financial statement disclosures, identification of permanent and temporary differences, and calculation of current and deferred tax provisions. Additional topics include uncertain tax positions and valuation allowances. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTAX 6482 - Advanced Partnership Taxation**

Advanced federal income tax course focusing on the taxation of partnerships and their partners. Topics: "substantial economic effect", allocation of debt to partners' bases, "hot assets", profits interests, related-party transactions, distribution "waterfalls", profit and loss allocation "waterfalls", and taxation of retiring partners. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTAX 6485 - Advanced Partnership Taxation**

This course is an advanced federal income tax course focusing on the taxation of partnerships and their partners. Topics often include discussions on allocations of partnership income and loss under the "substantial economic effect" and the partner's interest in the partnership rules, targeted capital accounts, allocation of debt to partners' bases, "hot assets", profits interests,

related-party transactions, distribution "waterfalls", profit and loss allocation "waterfalls", and taxation of retiring partners. Students cannot receive credit for both MTAX 6485 and MTAX 6482. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTAX 6490 - Income Tax of Trusts, Estates, and Beneficiaries**

There are five major income tax areas that are fundamental to a CPA or legal tax practice: (1) individual; (2) partnership; (3) C corporations; (4) S corporations; and (5) "fiduciary" taxation. This course focuses on the last of the core types of income taxation - fundamentally, the taxation of trusts, estates and their beneficiaries under Subchapter J of the Internal Revenue Code. There are three major areas covered by Subchapter J. First, the grantor trust rules deal with revocable trusts and, to many practitioner's surprise, many irrevocable trusts. Second, estates and irrevocable trusts that are not grantor trusts are governed by the distributable net income rules. Third, when someone inherits an asset that was not taxed to the decedent, such as a retirement plan, the income in respect of a decedent rules apply to the heir. This course examines each of these three major areas of income taxation under Subchapter J and focuses on the practical aspects of completing IRS Form 1041, U.S. Income Tax Return for Estates and Trusts, using real life examples. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTAX 6495 - Travel Study: Washington, D.C. Tax Experience**

By petition only. This course is a travel program. Students will travel to Washington, D.C. to meet with representatives from the various governmental entities that influence federal taxation. In particular, students will meet with representatives (i) from the various Congressional committees and legislative advisory committees involved in drafting tax legislation, (ii) from the Internal Revenue Service and Treasury Department, and (iii) from the United States Tax Court and other courts that consider federal tax cases. Prereq: At least 6 credit hours of MTAX courses and a cumulative MTAX GPA of no less than 3.00. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **MTAX 6499 - Consolidated Group Returns**

This course focuses on the preparation of consolidated group corporate tax returns filed pursuant to Internal Revenue Code section 1501 and the Treasury Regulations promulgated thereunder. Corporate affiliated groups are also discussed. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **MTAX 6500 - Advanced Corporate Taxation**

A study of the statutory and judicial tax rules and problems relating primarily to corporate reorganizations and commonly controlled corporations, with a special emphasis on the tax rules associated with restructuring of corporate entities in the context of corporate merger and acquisition transactions. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **MTAX 6800 - Special Topics in Taxation**

Courses offered irregularly for the purpose of presenting new subject matter in Taxation. Consult the current 'Schedule Planner' for semester offerings. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **MTAX 6840 - Tax Independent Study**

Permission of instructor required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Prereq: At least 9 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **MTAX 6939 - Tax Internship/Cooperative Education**

Supervised experiences involving the application of tax return preparation and tax planning concepts and skills in an employment situation. Prereq: At least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits. **Semester Hours:** 1 to 3

## **Theatre**

### **THTR 2450 - Introduction to Performing Arts and Events Management**

Offers students the ability to learn about stage managing events in the performing arts, in a non-pressure environment where leadership and organizational skills may develop and the student can gain a general understanding of the profession. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 2510 - Introduction to Oral Interpretation**

Students will have required readings in a variety of text styles. They will choose perform scenes from those texts introducing them to the basic performance skills required for Stage and Screen acting. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 2531 - Acting for Non-Theatre Majors**

Introductory acting course which focuses on the skills comprising the actor's art and their direct application to all disciplines of study outside of the theatre major. Students investigate interpersonal skills such as collaboration, communicating, risk-taking, listening, and creative problem solving. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 2560 - Topics in Theatre**

Specialized topics in theater. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

### **THTR 2600 - Studio I: Dynamics of Content Creation**

Investigates the process of creating performance texts for live, recorded and mixed presentation as well as the methods of selecting, transforming and pacing material for performance. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 2710 - Theatrical Design, Aesthetics, Production I**

Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 2820 - Departmental Production**

Participation in departmental production. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 1 to 1

### **THTR 2821 - Multi-Arts Performance**

Participation in an integrated arts performance piece. Credit hours are determined by a faculty advisor and are dependent on the level of responsibility in the production. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 2 to 3

### **THTR 2822 - Affiliated Theatre Production**

Participation in a production at an affiliated theatre in the Denver metro area. Credit hours are determined by a faculty advisor and are dependent on the level of responsibility in the production. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 2

### **THTR 2823 - Theatre Buffs Production**

Participation in a Theatre Buffs production. Credit hours are determined by a faculty advisor and are dependent on the level of responsibility in the production. Repeatable. Max Hours: 2 Credits. **Semester Hours:** 1 to 2

### **THTR 2824 - Theatre Practice: Management**

Practicum component of the theatre emphasis requirement through participation in stage management, box office management, or public relations for an approved production. Credit hours are determined by a faculty advisor and are dependent on level of responsibility in the production. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 2 to 4

### **THTR 2840 - Independent Study: THTR**

Prereq: Written permission of the supervising instructor. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **THTR 3010 - Stage and Production Management**

This is a course that addresses aspects of planning and managing various theatrical events and live performances. Emphasizes maximum results, given the complexity of live performance and the resource pool. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 3530 - Acting: Character and Text**

Fully prepared scene studies leading to advance work in characterization and text. Methods of discovering and utilizing the range of creative potential play scripts from the current production program are emphasized. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 3531 - Theatre of Social Responsibility**

Students study interactive theater based on selected social, political, or community concerns (peer pressure, gender identification and substance abuse). Students will create a performance piece on the selected topic. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 3560 - Topics in Theatre**

Specialized topic in theater. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **THTR 3561 - Topics in Theatre: Honors in Humanities Cluster**

Specific topics courses designed as cluster courses for the Honors in Humanities program. Titles rotate on a regular basis. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **THTR 3580 - Theatre for Children**

Offered irregularly. Study of processes involved in creating substantial theatre for children, including an examination of various sources for dramatizing children's stories, fairy tales, poems, and existing scripts. Includes a full production of a children's play to be performed by members of the class before audiences of children. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 3720 - Lighting Design**

A practical introduction to the history, theory, practice and equipment for lighting performing arts productions. Course emphasizes textual analysis for lighting design, basic electricity, lighting equipment and control, safety practices and lighting graphics. Requirements include related experiences with departmental productions. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 3760 - Sound Design for the Theater**

Sound design with practical application towards usage in the theatrical discipline. Includes studio techniques, live playback, script analysis, and recording techniques. Students will learn the various applications through work on class projects and performances. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 3840 - Independent Study: THTR**

Prereq: Written permission of supervising instructor. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **THTR 3995 - Travel Study Topics**

Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 4530 - Acting: Character and Media**

Provides skill development and workshop experience for the actor in media work-film, television, and video. Students will analyze and present scene work in both live and media performances utilizing feedback from class and instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 4560 - Topics in Theater**

Various special interest topics in the study of production, theory, and analysis with an emphasis on theater. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3



### **THTR 4570 - Creative Drama**

Offered irregularly. Study of creativity, its role and application in dramatics, and the manner in which creative dramatics assists in the growth and development of children and youth. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 4580 - Theatre for Children**

Offered irregularly. Study of the processes involved in creating designed and substantial theatre for children, including an examination of various sources for dramatizing children's stories, fairy tales, poems and existing scripts. Includes a full production of a children's play to be performed by members of the class before audiences of children. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 4611 - American Theatre History**

Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 4730 - Advanced Scenic Design**

Students will continue studies in graphic techniques, design styles and the integration of production design areas. Students will complete projects in scenic design for various production forms. Outcomes will include fully realized design projects with renderings, models and drafting. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 4760 - Topics in Design**

A special topics investigating production design in traditional and non-traditional endeavors. Students will explore various design skills through projects and participation in departmental productions. Attendance and review of productions will be scheduled. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **THTR 4770 - Advanced Production Design Studio**

Students will design a portfolio piece, professional quality project to be used in their BFA jury. This course provides a "Paper project" in contrast to Senior Capstone Project class which could be a group project with a number of variables. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 4820 - Theatre Practice**

Advanced practicum in production work for an approved production. Credit hours are determined by faculty advisor and are dependent on the level of responsibility in the production. Repeatable. Max Hours: 4 Credits. **Semester Hours:** 1 to 4

### **THTR 4840 - Independent Study: THTR**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **THTR 5530 - Acting: Character and Media**

Provides skill development and workshop experience for the actor in media work - film, television, and video. Students will analyze and present scene work in both live and media performances utilizing feedback from class and instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 5550 - Playwriting: The Short Form**

Writing workshop in one-act plays, with special emphasis on the demands of production: space, acting, staging conventions and techniques. Students will write and revise several one act play scripts. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 5560 - Topics in Theatre**

Various special interest topics in the study of production, theory, and analysis with an emphasis on theater. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **THTR 5570 - Creative Drama**

Offered irregularly. Study of creativity, its role and application in dramatics, and the manner in which creative dramatics assist in the growth and development of children and youth. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 5580 - Theatre for Children**

Offered irregularly. Study of the processes involved in creating substantial theatre for children, including an examination of various sources for dramatizing children's stories, fairy tales, poems, and existing scripts. Includes a full production of a children's play to be performed by members of the class before audiences of children. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 5611 - American Theatre History**

Offered irregularly. Investigates American theatres, methods of presentation, audiences, actors, acting, and economics from 1700 to the present, emphasizing contemporary practices and

values as away of understanding and appreciating the place of theatre in this country as it has evolved and developed. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 5840 - Independent Study: THTR**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **THTR 5939 - Internship**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

### **THTR 5995 - Travel Study**

Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **THTR 6840 - Independent Study: THTR**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **THTR 6950 - Master's Thesis**

Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

## **Theatre & Film General Courses**

### **TFVP 3730 - Scenery Design**

Introduces the principles and practices of production design for the theatre and film. Emphasizes textual analysis, the aesthetic and practical elements of design, design development and graphics. Requirements include related experiences working departmental productions. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **TFVP 3740 - Costume Design**

Introduces the principles and practices of costume design for theater and film productions. Students will focus on basic figure drawing, practical elements of design, design development and different costume rendering techniques through projects and productions. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Univ Honors and Leadership**

### **UNHL 1100 - The Life of the Mind**

The UNHL program was developed with the goal of creating academics with leadership skills to communicate their ideas and strong leaders with the ability to think critically, analyze issues from alternate perspectives and develop and communicate plausible solutions that take into consideration all points of view; the ideal end result of the program would be intelligent, ethical leaders and scholars in multiple fields of endeavor. The three areas around which the course will revolve are: a) Oil, b) Robots, c) Penicillin. Each of these topics allows multiple facets of a university education in the old sense to be explored from philosophy, history and art to chemistry, physics and engineering. There will be multiple means of exploration for each of these topics, from lectures and in-class discussions to field trips and engagement activities; there will be writing assignments in every phase that will focus on writing skills and writing for different audiences. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **UNHL 2755 - UHL Seminar**

Repeatable. Max Hours: 4 Credits. **Semester Hours: 1 to 1**

### **UNHL 2840 - Independent Study**

Repeatable. Max Hours: 12 Credits. **Semester Hours: 1 to 6**

### **UNHL 2850 - Faculty-Mentored Research**

UNHL student research conducted under the supervision of UC Denver faculty. Prereq: Permission of sponsoring faculty mentor and UNHL Director. Repeatable. Max Hours: 6 Credits. **Semester Hours: 1 to 6**

### **UNHL 2939 - Internship**

Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: Cumulative GPA of 3.0 or above and permission of UNHL Director/Associate Director. Repeatable. Max Hours: 3 Credits. **Semester Hours: 1 to 3**

### **UNHL 3010 - Leadership Behavior: Historical and Contemporary Perspectives**

This course will provide students with an opportunity to integrate historical and contemporary issues in the study of leadership behavior. The course is based on leadership research and writing that reveals the leader as facilitator, collaborator, servant, and follower. The course will provide students with an opportunity to reflect, discuss, and write on topics and questions related to leadership and followership behavior. Prereq: UNHL 1100. Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **UNHL 3100 - Ethics & Leadership: An Introduction**

This one-semester ethics and leadership course will introduce students to the wide variety of some of the best leadership theories and their application to current ethical issues. Prereq: UNHL 1100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UNHL 3110 - Leadership, Communication, and Conflict**

Leaders spend a significant amount of time managing conflict. This course is designed to explore the practical and theoretical basis of conflict and communication, and seeks to examine critical leadership processes that lead to the increased likelihood of organizational survival through successful conflict management. Prereq: UNHL 1100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UNHL 3150 - Negotiation, Bargaining, and Leadership**

This course integrates leadership theory and practice within a principled negotiation philosophy. Students will develop lifelong negotiation skills that reflect a principled negotiation framework for conflict management and strategic bargaining. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UNHL 3160 - Mindfulness and the Evolution of Consciousness**

The desire to understand consciousness has captivated the human imagination and raises important questions about human experience, awareness, nature, and life. This course is an exploration of the communication and evolution of consciousness in both historical and contemporary times. Consciousness scholarship covers broad areas of intellectual development, in particular, the relationship between our sense of human awareness and: biology, science, religion, art, nature, cosmology, culture, philosophy, metaphysics, and communication. Restriction: Restricted to students in the University Honors and Leaders Program (UNHL). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UNHL 3250 - Leadership and Sustainability**

This course examines issues of sustainability and the leadership challenges associated with the creation of sustainable social structures. Topics covered include a wide range of sustainability concerns such as: global population and food scarcity, alternative fuels and energy systems, biological and human health, leadership and sustainability program development, and symbolic and media representations of sustainability. Prereq: UNHL 1100 and second- or third-year status in the UNHL program. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UNHL 3310 - Innovation, Cutting-Edge Knowledge, and Self-Guided Learning**

The purpose of this course is to familiarize students with cutting-edge knowledge in major scientific and technological fields, against the background of cultural and artistic creativity, and to establish habits of lifelong, self-guided learning. To enhance this process, relevant faculty will

be invited to speak about innovation in their field, both in class and during the planned panel discussion. Prereq: UNHL 1100 and second- or third-year status in the UNHL program. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UNHL 3501 - Love and Death in the Greek Classics**

This course introduces students to classical Greek literature, focusing on love and death in Homeric epic, lyric poetry, tragic drama, the history and social science of Thucydides, the comedies of Aristophanes, and Plato's philosophical dialogues. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **UNHL 3503 - Ethics, Academic Integrity, and Social Responsibility**

This course combines research and class discussions in such a way that theories, viewpoints, and practical proposals regarding ethics and its application to intellectual responsibility are understood in their own right as well as in relation to other human activities. One daunting task will be facing up to the challenge of how to use the increasingly powerful information tools provided by universities. In the last third of the semester, students will be asked to work in teams on projects dealing with current ethics controversies. Prereq: UNHL 1100; not open to students who have taken UNHL 3100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UNHL 3530 - Making the Modern Environment**

Delve into how human societies have shaped the natural world. Interdisciplinary course asks how a distinctly modern environment was produced and discusses the origins of the contemporary environmental crisis. Analyzes historical contexts and scientific developments that have refashioned landscapes, altered human and ecological systems, and deeply affected ways of knowing and understanding environmental change. Restriction: Restricted to students in the University Honors and Leaders Program. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UNHL 3620 - Migration, Modernity, and Literacy**

An examination of the causes, consequences, difficulties, and enduring problems of migration in contemporary global society. Political, legal, and educational problems of modernity and mass migration are analyzed. Course work includes social scientific research into historical and contemporary migration flows. Prereq: UNHL 1100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UNHL 3625 - Food Justice: Urban Agriculture, Place, and Culture**

Addresses systemic inequities in access to fresh and healthy food as illustrated by neighborhoods termed "Food deserts." Questions examined include how sustainable/ethical relationships can be established between growing food and creating community, developing

consciousness of place, and affirming cultural food/agricultural traditions. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UNHL 3816 - Ethical Problems with Emerging Technologies**

This course identifies a number of the emerging technologies across various industries and disciplines, and seeks to understand the technologies and its practical applications in the real world, as well as any additional potential utilizations. It then explores the potential ethical challenges for both the developer and the industry, as well as for the nation in which it is developed, the U.S. and the world. Restriction: Restricted to students in the University Honors and Leaders Program (UNHL). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UNHL 3820 - The Economics of Life**

Study of the economic approach to human behavior and its application to the analysis of markets and areas including politics, law, family life, and other social issues. Students will develop an understanding of how the economic approach differs from other approaches to analyzing these phenomena and for the possibilities and limitations of the economic approach. Prereq: UNHL 1100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UNHL 3827 - American Music, American Culture: Folk, Roots, and the Blues**

Explores 20th-century American history, integrating a multiplicity of cultural perspectives, regional identities, and musical events and personalities. We will explore the relatively recent history of race relations in this country, as well as cultural policies and changemakers throughout the development of the modern music industry. Restriction: Restricted to students in the University Honors and Leaders Program (UNHL). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UNHL 3830 - Jazz in American Culture**

This class will explore the influence of jazz music (and related forms like ragtime and the blues) on American culture more generally. Specific topics to be explored include the Post-Reconstruction Race Politics, the Delta and the Great Migration, New Orleans, and the Harlem renaissance. Important figures of African-American literature, and Jazz & the Blues music will also be presented. Students will examine a multitude of literary and musical experiences through novels, short works, biographies, and listening. Prereq: UNHL 1100. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UNHL 3832 - Theater Practices, Politics, and Social Justice**

This class will emphasize performance techniques from master theatre practitioners, as they illuminate the relevance of theatre both as a form of artistic expression and a vehicle for social change. Students will read major dramatic works, attend plays and create original

performances exploring issues of political and social concern. Restriction: Restricted to students in the University Honors and Leaders Program (UNHL). Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **UNHL 3837 - Representing Community in Literature, Drama, and Film**

This writing intensive course examines several artistic genres that illustrate and interrogate notions of community. Communities may include family, utopias, military, or towns, and students will be required to identify and investigate a community of their choosing. Community in the classroom is crucial to the class, and students will assign homework to each other in addition to presenting their work in class. Restriction: Restricted to students in the University Honors and Leaders Program (UNHL). Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **UNHL 3840 - Creativity and Social Change**

This course draws on historical cases and contemporary movements to examine the ways human creativity - broadly situated across artistic, scientific, and social activities - can foster social change. Restriction: Restricted to students in the University Honors and Leaders Program (UNHL). Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **UNHL 3939 - Internship**

Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: Cumulative GPA of 3.0 or above and permission of UNHL Director/Associate Director. Repeatable. Max hours: 3 Credits. **Semester Hours: 1 to 3**

### **UNHL 3995 - Global Study**

UNHL Academic Honors track and Leadership Studies track. Travel study, with location and topics to be selected by the instructor. Prereq: UNHL 1100, 2755, and permission of the UNHL Director. Repeatable. Max Hours: 12 Credits. **Semester Hours: 1 to 4**

### **UNHL 4420 - Health Behaviors, Markets, and Policy**

This course is focused on policies that affect the provision of health care, the consumption of health care, and health behaviors. Students will be exposed to research from a variety of disciplines on health care markets, the role of government, and the causes and consequences of risky health behaviors. Restriction: Restricted to students in the University Honors and Leaders Program (UNHL). Max hours: 3 Credits. **Semester Hours: 3 to 3**

### **UNHL 4820 - Scientific Thinking**

Intensive analysis of primary literature from across the sciences. Students will expand their understanding and appreciation of the scientific method and develop the ability to critically



analyze and evaluate experimental design in both scientific and social contexts. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UNHL 4840 - Independent Study**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

### **UNHL 4850 - Faculty-Mentored Research**

UNHL student research conducted under the supervision of UC Denver faculty. Prereq: Permission of sponsoring faculty mentor and UNHL Director. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **UNHL 4991 - Senior Research Seminar I**

Capstone experience for UNHL program. Students will work in teams on research projects of a multidisciplinary nature. Prereq: Fourth-year standing in the UNHL program or permission of the UNHL Director. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **UNHL 4992 - Senior Research Seminar II**

Continuation of UNHL 4991. Students will work in teams on research projects of a multidisciplinary nature. Prereq: Fourth-year standing in the UNHL program or permission of the UNHL Director. Max hours: 2 Credits. **Semester Hours:** 2 to 2

## **University Skills & Engagement**

### **UNIV 1110 - College Success**

This first-year course supports students by fostering academic skills and strategies, university engagement, personal strengths and goals, and diversity awareness and inclusion. No co-credit with UNIV 1111. Restriction: Restricted to Freshman level students. Max hours: 1 Credit.

**Semester Hours:** 1 to 1

### **UNIV 1111 - College Success**

This first-year course supports students by fostering academic skills and strategies, university engagement, personal strengths and goals, and diversity awareness and inclusion. No co-credit with UNIV 1110. Restriction: Restricted to Freshman level students. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **UNIV 1112 - College Success - Major and Career Exploration**

UNIV 1112 is designed for first-year college students and new transfer students who are navigating their major and career exploration process. This course explores college majors, examines career development theories, and introduces students to experiential learning opportunities. Students will connect to campus resources that support major and career exploration. Restriction: Restricted to first-year students and new transfer students with less than 30 credit hours. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **UNIV 3110 - Special Topics: Student Success and College Student Development**

This course is specifically designed to educate students to be effective student leaders. Emphasis will be placed on leadership skills, communication skills, group facilitation skills, customer service, institution policies and procedures, and academic and campus resources. Max hours: 1 Credit. **Semester Hours:** 1 to 1

### **Urban & Regional Planning**

#### **URPL 3000 - Planning the Built Environment**

Learn the multidisciplinary field of urban planning, focusing on how to plan and design sustainably at multiple scales: site, neighborhood, city, region. We use lecture, discussion, and applied learning techniques, including fieldwork, mapping, case studies, guest practitioners, and in-class workshops. Restriction: Restricted to undergrads with sophomore standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **URPL 4000 - Sustainable Urban Planning**

Covers the multidisciplinary practice of urban planning, focusing on concepts, policies, and tools to plan sustainably at multiple scales; site, neighborhood, city, and region, using lecture, discussion, and applied learning through field work, case studies, guest practitioners, and in-class workshops. Prereq: ENGL 1020 Restriction: Restricted to students with junior standing or higher. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **URPL 5000 - Planning History and Theory**

This course offers a comprehensive review of the major historical and theoretical developments in planning; the human aspects of planning as a social, political, and community-oriented process; public engagement; social justice; planning leadership and advocacy; and the future of planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

#### **URPL 5010 - Planning Methods**

This course focuses on the most commonly applied quantitative and qualitative methods used in planning; data organization and management principles; and various ways to collect, analyze,

and communicate data as a fundamental component of the planning process. Cross-listed with GEOG 4000. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 5020 - Planning Law and Institutions**

This course covers the legal basis for planning; the evolution of planning law through a comprehensive review of landmark court decisions; and the types and hierarchies of governments, their powers and relationships, and how planning operates within those governmental contexts. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 5030 - The Planning Profession**

This course offers a comprehensive survey of the breadth and depth of the planning profession; different types of planners and the organizations that employ them; business aspects of planning; planning solicitation process; planning ethics; and professional/career development in planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 5040 - Urban Sustainability**

Examines the interface of the natural and social realms in cities. Topics include the environmental history of cities; the causes, environmental impacts and mitigation of sprawl; urban green infrastructure; and best practices in planning environmentally sustainable cities and suburbs. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 5050 - Urban Development**

Explores the procedures, policies and politics of planning and real estate development. Topics include the relationship between planning goals and regulations; real estate development and finance; land division, entitlement, and regulation; site planning and development review; and public infrastructure. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 5060 - Planning Workshop**

An introduction to the studio environment, this course provides students with experience and knowledge/skills development in physical planning and design, the planning process, plan making, and collaborative planning, plus introductory instruction in GIS and SketchUp. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **URPL 6000 - Planning Project Studio**

This studio course requires student teams to complete a substantial planning project using a comprehensive set of knowledge/skills for real-world clients. Five focus area options offered annually: Healthy Communities, Urban Revitalization, Regional Sustainability, International

Experience, and Summer in Colorado. Prereq: URPL 5060 or 6630. Max hours: 6 Credits.  
**Semester Hours:** 6 to 6

### **URPL 6200 - Land Development Regulations**

This course provides a comprehensive exploration of the various components of land development regulation, including preliminary plats; general/final development plans; zoning; PUDs; variances; site plan/development review; land use regulators; regulatory processes. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6205 - Plan Making**

This course offers a broad overview of the various types of plans and the specific processes involved in their creation, including comprehensive plans; rural/small town plans; corridor plans; small area plans; campus/ institutional plans; special plans. Max hours: 3 Credits.  
**Semester Hours:** 3 to 3

### **URPL 6210 - Planning Engagement**

This course focuses on roles and methods of public engagement in planning. Topics include planning advocacy; public meetings; public engagement techniques; diverse publics; controversial planning topics; mediation. Restriction: Restricted to Graduate Urban and Regional Planning students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6215 - Analyzing the Built Environment**

This course explores various means and techniques used to analyze and characterize the built environment, including land division and development measures; urban morphology; and analyzing the spatial attributes of cities and regions at varying scales and perspectives. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6220 - Advanced Research Techniques**

This course offers an in-depth look at a variety of research principles and techniques, including advanced qualitative and quantitative data collection; survey design; sampling; probability distributions; hypothesis testing; inferential statistics; other topics associated with scholarly research. Prereq: URPL 5040 or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6225 - Urban Policy Analytics**

Students learn quantitative analysis techniques that help answer key questions for planning, such as whether implemented policies had their intended effects. Topics covered include research design, working with databases, spreadsheet analytics, and bivariate/multivariate

statistical analysis. Prereq: URPL 5010 - Planning Methods or instructor's permission. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6249 - Project Management**

Introduces the knowledge and skills of Project Management (PM) in a business environment. Emphasis will be on the entire project life cycle, the project management process groups and the knowledge areas as presented in the Project Management Body of Knowledge (PMBOK), from the Project Management Institute (PMI). Managerial aspects, quantitative tools, and traditional techniques of Project Management will be covered. A variety of projects will be examined. Note: Cannot receive credit for both DSCI 6820 and BUSN 6820. Cross-listed with BANA 6650. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6250 - GIS for Urban Planning**

This course is an accelerated introduction to GIS that focuses on spatial analytics for Urban Planning. The course includes advanced GIS applications and tools; GIS integration with other applications and technologies; and innovations in geo-spatial data collection, analysis, and presentation. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6255 - Emerging Planning Technologies**

This course explores the rapid pace of innovation in planning-related technologies and offers a comprehensive review of the latest web-based and mobile applications, and new technologies used in virtual participation/engagement, data collection/visualization, social media/crowdsourcing, and geo-spatial data collection and analysis. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **URPL 6260 - Advanced Geo-Spatial Methods**

Students will be introduced to the hardware, software, theory, and skills required to use Geographical Information Systems (GIS). In this course, students will learn how to use GIS software to manage, analyze, map, and present spatial data to support the planning and design processes. Prereq: An introductory GIS class is required before taking this class. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6265 - Visualization for Planning**

This course covers visual design theory and advanced instruction in Adobe Illustrator, Photoshop, and InDesign to create compelling info-graphics, renderings, and reports, as well as advanced instruction in SketchUp to create 3D visualizations at multiple urban scales.

Restriction: Restricted to graduate level MURP students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **URPL 6300 - Community and Environmental Health Planning**

A place-based approach to understanding the social, economic, environmental, and political factors that influence individual and community health with a focus on reducing health disparities. Covers policies, practices, data, and methods for healthy communities planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **URPL 6305 - Healthy Community Assessments**

This course focuses on defining, organizing, and conducting Health Impact Assessments, health measures, policies, best practices, and other types of studies and analyses related to the link between the built environment, public health, and healthy communities. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **URPL 6310 - Community Food System Planning**

Healthy communities require sustainable local and regional food systems. This course examines how communities can collaboratively develop and implement programs, processes and practices that help ensure food security and equitable access to healthy food options for all populations. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **URPL 6349 - Global Health Studies II**

Global Health Studies II: Comparative Health Systems. The course has three parts: (1) examines the social and cultural construction of sickness, systems of etiology cross culturally, the therapeutic encounter, varying roles of healer and patient, and the cultural basis of all healing systems; (2) considers health systems in the context of global health reform, and the history, organization, and roles of institutions of global health governance; and (3) considers the interrelationship of health, foreign policy and global security. Cross-listed with PBHL 4020. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **URPL 6350 - Form and Formation of Cities**

This course investigates the origins and types of human settlements; the history of cities and urbanization; urban morphology and the evolution of the built environment; urban form principles and theory; and types of urbanism. Cross-listed with ARCH 6270, URBN 6633, and LDAR 5530. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **URPL 6355 - Urban Redevelopment Strategies**

This course focuses on the best practices and strategies used to help revitalize urban areas. Topics include urban infill development; TODs; adaptive reuse; historic preservation; design review; parking; public spaces; brownfield/grayfield redevelopment; culture/tourism; special

districts; incentives/funding; and revitalization policies. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6360 - Urban Infrastructure**

This course provides a comprehensive exploration of transit planning, including transit planning fundamentals; transit routes and systems; transit modes and technologies; ridership modeling; scheduling; operations; funding; policies and regulation; relationship to land use; and facilities/design requirements. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6365 - Parks and Public Spaces**

This course offers a focused look at the role of parks and public spaces in the development and activation of cities; their designs, qualities, and components; management /operations; funding; policies; equal access; role as community and economic development tool. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6370 - Sprawl and Growth Management**

This course addresses causes of sprawl (large lot zoning, highway subsidies, suburban amenities, taxes and municipal services), social and environmental consequences of sprawl, anti-sprawl growth management policies, open space preservation methods, and retrofitting suburbs. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6397 - Design Policy/Regulation**

Argues that a role of urban designers is to shape built environment through combination of physical intervention and policy development. Students review urban economic and real estate trends and assess zoning/land use regulations to understand impacts on built environment quality. Cross-listed with URBN 6642. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6398 - Design Process**

Advances current practice by exploring innovative methods of design analysis, production, representation, and communication. Community participation and civic engagement are integral components of seminar. Cross-listed with URBN 6641 and LDAR 6741. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6399 - Sustainable Urban Infrastructure**

Focuses on developing uniform vocabulary on sustainable infrastructure across science & technology, architecture & planning, public policy, and health & behavioral sciences. Students learn concepts, principles/pathways and evaluation techniques for promoting the diffusion of

sustainable urban infrastructures. Cross-listed with CVEN 5460. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **URPL 6400 - Community Development**

This course introduces community development, examining planners' and other stakeholders' roles in the field; key theories and practices; community dynamics; community-based organizations; asset-based development; social equity; and the influence of local physical and economic factors on community development. Cross-listed with ARCH 6256. Restriction: Graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6405 - Urban Housing**

This course examines housing trends and patterns; supply and demand factors; housing policies; housing challenges (e.g., inequitable distribution, special needs, segregation/discrimination, and homelessness); sociological, demographic, and economic considerations; and the roles of planners and the public and private sectors. Cross-listed with LDAR 6755 and ARCH 6205. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6410 - Social Justice in Planning**

This course investigates various social justice issues encountered in planning, including conflict resolution; advocacy; environmental justice; social equity; culture and diversity; disadvantaged populations; public engagement techniques; affordability; equal access; and policy impacts. Cross-listed with LDAR 6637 and ARCH 6258. Restriction: Graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6449 - Urban Social Problems**

Examines local government from the perspective of sociology and group dynamics. Course could include some or all of the following subjects: neighborhoods and community groups, class and race relations, community crime, social service issues, immigration, the underclass in American society, and related urban social problems. Cross-listed with PUAD 5628 and 7628. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6450 - Urban Economic Analysis**

This course introduces students to the fundamentals of urban, land, and transportation economics, covering topics such as land markets, environmental regulation, infrastructure and service finance, impact fees, land value capture, pricing incentives, decision analysis, and cost-benefit analysis. Restriction: Restricted to graduate level students. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **URPL 6455 - Real Estate Development and Finance**



The course offers a detailed analysis of the real estate development process, its relationship to the planning/design profession, and financial aspects of real estate development including measures of value, capitalization rates, capital budgeting, debt and equity markets and taxation. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6460 - Green Real Estate Development**

This course offers an exploration into the principles, designs, policies, and best practices relating to sustainable real estate development. Topics include infill development; transit-oriented development; LEED-ND; green buildings; universal design; mixed-income projects; and net-zero developments, among others. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6499 - Preservation Theory and Practice**

Philosophical questions in preservation practice; balancing significance in the environment with natural decay and demands for change. Policy issues as well as preservation and adaptation design. Cross-listed with HIPR 6010. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6500 - Environmental Planning/Management**

This course addresses issues related to planning under major environmental laws, ecosystem service-based management, urban green infrastructure, urban watershed and river management, urban forest and parks planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6505 - Enviro. Policy & Regulation**

This course focuses on the important field of environmental policy and regulation, including topics such as the National Environmental Policy Act (NEPA); environmental justice; environmental law; land use conflicts; contamination/remediation; environmental regulators; and regulatory policies and enforcement. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6510 - Energy/Natural Res. Planning**

This course provides an overview of the issues associated with energy and natural resource planning. Topics include: energy policy; alternative energy development; water resources; extraction/mining; natural resource protection and regulation; resource management, policies, politics, and technologies. Cross-listed with GEOG 4260. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6515 - Sustainable Planning & Design**

This course takes a comprehensive look at the principles of sustainable planning and design. Topics include: sustainability defined; measuring sustainability; sustainable planning/practices;

sustainable design; LEED and other sustainability programs and organizations; environmental quality; sustainability advocacy. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6547 - Urban Ecology**

This lecture/seminar will cover ecological principles as applied to urban systems (lecture portion) and students will do an intensive study, presentation, and discussion on the topic of their choosing (seminar portion). Cross-listed with LDAR 6655. Restriction: Restricted to graduate students in the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6548 - Defining & Measuring Sustainability**

Unique cross-disciplinary course that teaches students community engagement strategies to define sustainability goals. Life cycle assessment and material flow analysis tools used to measure environmental sustainability benchmarks. Fieldwork applies both tools to cities in Colorado. Cross-listed with CVEN 5461. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6549 - Environmental Impact Assessment**

The objective of this course is to provide the foundation for understanding the environmental impact assessment process, its legal context, and the criteria and methods for procedural and substantive compliance. Prereq: URPL 5530 or permission of instructor. Cross-listed with GEOG 4220, 5220. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6550 - Transportation Planning/Policy**

This course examines policy issues in urban transportation planning: how transportation system design and political/institutional contexts shape transportation decision-making; major modes of urban transportation; and the social, environmental, economic, energy, and health impacts of transportation systems. Cross-listed with GEOG 4670. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6555 - Transportation, Land Use, and the Environment**

Students will learn how current transportation modes shape regions and how future transportation technologies might impact us. Topics include policy making and governance; land use interactions with transportation investments; climate change and resilience; energy use; environmental justice; and equity considerations. Restriction: Graduate level students. Cross-listed with GEOG 4630. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6560 - Transit, Pedestrian, and Bicycle Planning**

Course provides a comprehensive exploration of planning for transit and non-motorized modes (bicycling and walking). Topics include demand estimation, travel behavior, design and suitability analysis, land use interactions, public policy, and evolving technologies. Restriction: Graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6565 - Pedestrian & Bicycle Planning**

This course provides a detailed focus on the unique planning issues and factors involved with bicycle and pedestrian modes of transportation, including pedestrian/bicycle planning fundamentals; routes and systems; facilities and design requirements; funding; maintenance and operations; policies; and best practices. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6598 - Traffic Impact Assessment**

Covers (1) procedures to satisfy state and local requirements for transportation impact studies, (2) methods to perform trip generation, distribution, and traffic assignment for impact analyses, and (3) analysis of transportation impacts on residential communities, mode choice, regional business (downtown or suburban), peak and off-peak travel times, noise, safety, parking and pedestrians. A course project requires students to develop an application of analysis software to a case study area. Cross-listed with CVEN 6512. Restriction: Graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6599 - Sustainable Transportation Systems**

This course examines notable topics in sustainable transportation: demystifies conventional transportation engineering methods; and explores empirical examples of why such methods are often misguided. The intent is to enlighten engineering students and help support planning/policy students interested in transportation sustainability. Cross-listed with CVEN 5633. Restriction: graduate standing or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6600 - Regional Growth and Equity**

Explores the institutions, policies, laws and funding that support planning for housing, transportation, infrastructure, air quality, and job creation at the metropolitan scale. Students will learn analytic techniques to study the labor market, economic growth and performance, commuting patterns, etc. Restriction: Restricted to graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6605 - Regional Economic Systems**

This course offers a comprehensive investigation into regional economic systems; metropolitan economies; regional economic development; regional market assessment; job generation;

taxes/spending; and fiscal/economic policies and impacts at the metropolitan, regional, and statewide scale. Cross-listed with GEOG 4400. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6610 - Planning Sustainable Suburbs**

This course takes a detailed look at the unique characteristics, issues, and challenges associated with planning and retrofitting automobile-oriented suburban communities and the opportunities for development of new communities using sustainable planning and design principles. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6615 - Small Town, Rural, and Resort Planning**

This course investigates the unique characteristics, issues, and challenges associated with planning in small and/or rural communities, including agricultural issues and farmland conservation; growth management; rural economic development; and small downtown revitalization strategies. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6620 - Tourism and Resort Planning**

This course investigates the unique aspects associated with planning and developing sustainable tourism infrastructure. Topics include: eco-tourism; historic tourism; cultural tourism; urban tourism; sports and recreation planning; regional tourism planning; and sustainable resort planning and development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6625 - Sustainable Planning for Tourism and Small Towns**

This course is about sustainably planning for tourism-dependent communities, particularly small towns. It focuses on the impacts of tourism on fragile cultural and ecological environments and addresses how to assess impacts, mitigation approaches and tools, and communication with the public. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6645 - Disaster/ClimateChangePlanning**

Introduces students to concepts and debates that shape disaster and climate change studies. Features case studies of disaster and climatic issues affecting Colorado and the Rocky Mountain region. Looks specifically at how planning can reduce risk and increase local resilience. **Semester Hours:** 3 to 3

### **URPL 6650 - International Development Planning: Theory and Practice**

This course examines key development issues and planning approaches in cities of the Global South. Topics include: development theory; legacies of colonial urbanisms; actors and institutions in development; urban informality; water and sanitation; housing and land tenure; and climate change, among other topics. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6655 - Comparative International Planning**

This course investigates the global dimensions of planning, including a survey of global planning issues; a comparative analysis of planning philosophies, policies, techniques and approaches used throughout the world; and international planning coordination and organizations. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6675 - International Field Research: Methods and Analysis**

This course will teach students the fundamentals of data collection, analysis, and dissemination in an international - and mostly developing world - context. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6800 - Special Topics: Urban and Regional Planning**

Various topical concerns are offered in urban and regional planning, theory, concepts, methods, case studies and practice. Repeatable. Max hours: 9 Credits. **Semester Hours:** 3 to 3

### **URPL 6805 - Planning Internship**

Designed to provide professional practice experience in urban and regional planning. The emphasis is on actual work experience in settings with client groups as the students assist them in determining solutions to their problems. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **URPL 6810 - Independent Study: URPL**

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to urban and regional planning. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 3

### **URPL 6850 - ACE Mentoring**

Graduate students work with professional architects, designers, and engineers mentoring students in selected local high schools to learn problem solving, graphics and model making to produce a design project. Student mentors develop lesson plans, outcomes and keep a weekly journal. Cross-listed with ARCH 6470 and LDAR 6470. Restriction: Restricted to majors within the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6900 - Planning Capstone**

Planning Capstone A requires students to identify an independent study/small group project of their choosing and develop a detailed plan to complete the project. Prereq: URPL 6000 or instructor consent. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **URPL 6920 - Planning Thesis A**

Spanning two semesters, Planning Thesis requires students to plan and complete a research thesis of their choice. Part A provides instruction for proper thesis research, analysis, and writing while students develop a detailed work plan and begin their research. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6925 - Planning Thesis B**

Spanning two semesters, Planning Thesis requires students to plan and complete a research thesis of their choice. Part B includes the completion of the research and the thesis document, and presentation of the project to the student's thesis committee. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URPL 6940 - Teaching Assistantship**

Work as teaching assistant, mentored by the class instructor. Assist with curriculum delivery and development and grading of assignments while learning about pedagogical methods. This is intended for students who may be considering a career in teaching. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **Urban Design**

### **URBN 6610 - Design Studio I**

Working at the urban/metropolitan scale, this studio introduces design through urban structure and morphology, presenting the city as a complex ecological organism comprised of interrelated systems. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 6 to 6

### **URBN 6611 - Design Studio II**

Advances understanding and application of urban design tools, methods and practice. Studio emphasizes designer's proactive role in shaping design using regulations and policy. Students consider real estate development, economics, aesthetic criteria, historic preservation, and methods of effective community participation. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 6 to 6

### **URBN 6612 - Advanced Travel Design Studio**

Students travel to international or US urban location(s) to engage advanced design questions. Studio operates within network of professionals involved in contemporary projects. Focus on complexities of issues-based practice. Students develop complete project and consider context, politics, economics and regulations. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **URBN 6633 - Form and Formation of Cities**

This course investigates the origins and types of human settlements; the history of cities and urbanization; urban morphology and the evolution of the built environment; urban form principles and theory; and types of urbanism. Cross-listed with URPL 6350, ARCH 6270, and LDAR 5530. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URBN 6640 - History of the City**

Introduces students to the history of global cities through selected typologies. Explores similarities and differences among cities considered against the larger cultural, political and socio-economic envelope of which they are part. Provides awareness of origins, growth and evolution of urban form. Cross-listed with ARCH 6240. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URBN 6641 - Design Process**

Advances current practice by exploring innovative methods of design analysis, production, representation, and communication. Community participation and civic engagement are integral components of seminar. Cross-listed with URPL 6398 and LDAR 6741. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URBN 6642 - Design Policy**

Argues that a role of urban designers is to shape built environment through combination of physical intervention and policy development. Students review urban economic and real estate trends and assess zoning/land use regulations to understand impacts on built environment quality. Cross-listed with URPL 6397. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URBN 6643 - Visualization for Planning**

This course covers visual design theory and advanced instruction in Adobe Illustrator, Photoshop, and InDesign to create compelling info-graphics, renderings, and reports, as well as advanced instruction in SketchUp to create 3D visualizations at multiple urban scales. Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URBN 6644 - Sustainable Urbanism**

This seminar explores the connections between ecology and urbanism. It will examine the multiple, interrelated ecological and social systems operating in the city. Students will explore innovative design processes and techniques that serve to create a higher quality of life and place with a particular emphasis on the effectiveness of sustainable design approaches at varying scales. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URBN 6645 - Global Design Practice**

This seminar will educate students about critical issues related to practicing design in a global context. Course will examine diverse issues of design and planning practice from contracts, communication and culture to remote research, design opportunities and ethics. Prereq: URBN 6612. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URBN 6651 - Design Practice**

Introduces students to the business of urban design through contact with prominent and innovative urban design professionals. Examines issues of design implementation; project management; communication, negotiation and facilitation; leadership; and finance. Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URBN 6652 - Design Seminar**

Investigates topical issues in urban design, typically within the framework of a theme running through an entire course of study. Focus is on critical evaluation of theory, process and methods. Cross-listed with LDAR 6652. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **URBN 6686 - Special Topics: Urban Design**

Various topical concerns are offered in urban design history, theory, elements, concepts, methods, implementation strategies, and other related areas. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **URBN 6840 - Independent Study: URBN**

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to urban design. Repeatable. Max Hours: 3 Credits. **Semester Hours:** 1 to 3

### **URBN 6930 - Urban Design Internship**

Designed to provide professional practice experience in urban design. Emphasis on actual work experience in settings with client groups as students assist them in determining solutions. Program directors approval required. Max hours: 3 Credits. **Semester Hours:** 3 to 3



## **Urban Teacher Education**

### **UEDU 1930 - Introduction to Socially Just Education**

This course examines sociological issues concerning urban schools, communities and provides an overview of school culture, diversity and social realities in American schools. Students will critically examine education issues that affect their lives, their community and classrooms throughout the country. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 4040 - Planning for Learning**

This course explores multiple aspects of student learning: Including 1) standards-based instruction 2) cultural responsive instructional design, 3) assessment and data, and 4) differentiation in curriculum and instruction so that meaningful instruction becomes accessible to all students. Restriction: Professional Year Admission required. Cross-listed with 5040. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 4050 - Elementary Capstone: Planning, Instruction & Assessment**

The purpose of this course is to re-visit multiple aspects of instructional and curriculum design, implementation, and evaluation. The goal is to promote access to knowledge for all learners, including those who are diverse linguistically and culturally and those identified with special needs. Cross listed with UEDU 5050. Restriction: Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 4052 - English/LA & Social Studies Capstone: Secondary Ed**

Through teaching units of instruction in school placements, secondary English/LA and Social Studies teacher candidates learn both unit and lesson design, assessment of student learning, and differentiation of curriculum and instruction to promote access to knowledge for all learners. Cross-listed with UEDU 5052. Restriction: Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 4110 - Tchg Literacy in Eng Ed**

Designed to meet both Colorado Literacy Council & Colorado Performance-Based Standards for prospective secondary English/LA teachers concerning Knowledge of Literacy, the course provides knowledge and practice using specific literacy methods to enhance students' literacy development in English/LA/reading classrooms. Cross-listed with UEDU 5110. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 4464 - Methods of Teaching Social Studies**

One of two courses on linguistically and culturally relevant social studies teaching. Course content includes geography, economics, civics. Cross-listed with UEDU 5464. Restriction: Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 4465 - Methods of Teaching History**

One of two courses on linguistically and culturally relevant history teaching. Cross-listed with UEDU 5465. Restriction: Professional Year Admission required. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 4840 - Independent Study**

Independent Study in Urban Community Teacher Education, Topic of study varies according to project. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 3 to 3

### **UEDU 4845 - Special Topics:**

Course topics will vary depending on faculty and student interests. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 1 to 5

### **UEDU 4931 - Internship & Lrng Comm I**

Teacher candidates engage in systematic observation of, participation in, design of, and reflection on curricular, instructional, and management practices across the full range of educational programs within a school. Additionally, teacher candidates participate in the activities of a school community (the school, its classrooms and the community in which the school exists). Graduated learning activities for each internship and time requirements are specified in the program handbook. Cross-listed with UEDU 5931. Restriction: Professional Year Admission required. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **UEDU 4932 - Internship & Lrng Comm II**

Teacher candidates engage in systematic observation of, participation in, design of, and reflection on curricular, instructional, and management practices across the full range of educational programs within a school. Additionally, teacher candidates participate in the activities of a school community (the school, its classrooms and the community in which the school exists). Graduated learning activities for each internship and time requirements are specified in the program handbook. Restriction: Professional Year Admission required. Cross-listed with UEDU 5932. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **UEDU 4933 - Internship & Lrng Comm III**

Teacher candidates engage in systematic observation of, participation in, design of, and reflection on curricular, instructional, and management practices across the full range of

educational programs within a school. Additionally, teacher candidates participate in the activities of a school community (the school, its classrooms and the community in which the school exists). Graduated learning activities for each internship and time requirements are specified in the program handbook. Restriction: Professional Year Admission required. Cross-listed with UEDU 5933. Max hours: 6 Credits. **Semester Hours:** 6 to 6

### **UEDU 4934 - Extended Internship & Learning Community**

Teacher candidates engage in systematic observation of, participation in, design of, and reflection on curricular, instructional, and management practices across the full range of educational programs within a school. Additionally, they participate in the activities of a professional learning community. Cross-listed with UEDU 5934. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 4 to 8

### **UEDU 5015 - TFA Professional Learning Communities**

The Teach for America Professional Learning Communities are designed to be a resource and forum for content groups to collaborate on best practices in assessment, instruction, and data gathering. As truly purposeful communities, they exhibit five characteristics: a shared mission and vision, high levels of collective efficacy, strategic use of all available assets, outcomes that matter to all, and adherence to agreed-upon processes. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 5040 - Planning for Learning**

This course explores multiple aspects of student learning: Including 1) standards-based instruction 2) cultural responsive instructional design, 3) assessment and data, and 4) differentiation in curriculum and instruction so that meaningful instruction becomes accessible to all students. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Cross-listed with 4040. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 5050 - Elementary Capstone: Planning, Instruction & Assessment**

The purpose of this course is to re-visit multiple aspects of instructional and curriculum design, implementation, and evaluation. The goal is to promote access to knowledge for all learners, including those who are diverse linguistically and culturally and those identified with special needs. Cross listed with UEDU 4050. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 5052 - English/LA & Social Studies Capstone: Secondary Ed**

Through teaching units of instruction in school placements, secondary English/LA and Social Studies teacher candidates learn both unit and lesson design, assessment of student learning, and differentiation of curriculum and instruction to promote access to knowledge for all

learners. Cross-listed with UEDU 4052. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 5060 - Motivation and Engagement in Curriculum and Learning**

This course focuses on the Six Cs of motivation and engagement; the framework designed to reach these students who are not complaint learners. This course allows teachers to think deeply about their role in motivating and engaging students and allows participants to apply the research to their individual classrooms. The classes incorporate the M.E. (motivation and engagement) Framework into each lesson. Teachers will gain a deep understanding of motivation and engagement through modeling, research, and a "transfer" of knowledge. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 5070 - Curriculum Theories in Urban Education**

Topics in this course include: curriculum theory; the debate on the purpose of curriculum; multicultural education; critical race theory; social class and school improvement; the intended and unintended consequences of school accountability, reform and closures; teacher retention; and teacher burnout. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 5075 - Transforming Pedagogy for the 21st Century**

This course is designed to support teachers in establishing a classroom culture centered on fostering students' 21st Century Success skills: collaboration, communication, creativity, and critical thinking. Teachers will explore ways of implementing and supporting 21st-century skills in planning and instruction. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 5110 - Tchg Literacy in Eng Ed**

Designed to meet both Colorado Literacy Council & Colorado Performance-Based Standards for prospective secondary English/LA teachers concerning Knowledge of Literacy, the course provides knowledge and practice using specific literacy methods to enhance students' literacy development in English/LA/reading classrooms. Cross-listed with UEDU 4110. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 5240 - Culture of Education Policy**

This course examines major issues in education policy analysis. Students will be required to critically analyze an educational policy issue uncovering the context, determining how the policy was implemented and what the outcomes were, intended as well as unintended. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 5340 - Leading Social Emotional Learning in P-12 Schools**

In this course, scholars will learn the various definitions, purposes and value of socialemotional learning (SEL) in order to lead social-emotional learning in P-12 schools. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **UEDU 5464 - Methods Teachg Social Studies**

One of two courses on linguistically and culturally relevant social studies teaching. Course content includes geography, economics, civics. Cross-listed with UEDU 4464. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits.

**Semester Hours:** 3 to 3

### **UEDU 5465 - Methods of Teaching History**

One of two courses on linguistically and culturally relevant history teaching. Cross-listed with UEDU 4465. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 5470 - Democracy and Social Studies Education**

This course explores the current and historical relationship between democracy and social studies education and challenges teachers to think critically about challenging students to not only participate in democracy but transform it. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 5660 - History of Schooling in the United States**

This course introduces education professionals to the history of contemporary public school. The contents of this course emphasize the ways in which people from marginalized national and cultural groups have experienced education through eras of compulsory schooling, school segregation, and the contemporary context of school reform. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 5705 - Global Experiential Learning**

Develop global competency skills. Research problems or opportunities of global significance using 21st century skills. Engage in learning communities to reflect, analyze and communicate international educational experiences. Design global education teaching and learning or compare education perspectives. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 5710 - Global Education Capstone Project**

Propose a culminating project that allows integration of previous coursework and travel experience to translate into practice. Collaborate to develop a product that will be of use in a

work setting, school, or classroom. Present and defend the capstone project. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 5840 - Independent Study**

Independent Study in Urban Community Teacher Education, Topic of study varies according to project. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

### **UEDU 5845 - Special Topics:**

Course topics will vary depending on faculty and student interests. Repeatable. Max Hours: 15 Credits. **Semester Hours:** 1 to 5

### **UEDU 5850 - Capstone for Integrated MA**

The capstone is a culminating project that provides a way for students to demonstrate the knowledge and skills they acquired during the MA program skills by planning, completing, and presenting a culminating project linked to the United States educational system. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **UEDU 5931 - Internship & Lrng Comm I**

Teacher candidates engage in systematic observation of, participation in, design of, and reflection on curricular, instructional, and management practices across the full range of educational programs within a school. Additionally, teacher candidates participate in the activities of a school community (the school, its classrooms and the community in which the school exists). Graduated learning activities for each internship and time requirements are specified in the program handbook. Cross-listed with UEDU 4931. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **UEDU 5932 - Internship & Lrng Comm II**

Teacher candidates engage in systematic observation of, participation in, design of, and reflection on curricular, instructional, and management practices across the full range of educational programs within a school. Additionally, teacher candidates participate in the activities of a school community (the school, its classrooms and the community in which the school exists). Graduated learning activities for each internship and time requirements are specified in the program handbook. Prereq: UEDU 5931. Cross-listed with UEDU 4932. Max hours: 2 Credits. **Semester Hours:** 2 to 2

### **UEDU 5933 - Internship & Lrng Comm III**

Teacher candidates engage in systematic observation of, participation in, design of, and reflection on curricular, instructional, and management practices across the full range of

educational programs within a school. Additionally, teacher candidates participate in the activities of a school community (the school, its classrooms and the community in which the school exists). Graduated learning activities for each internship and time requirements are specified in the program handbook. Prereq: UEDU 5931 and UEDU 5932. Cross-listed with UEDU 4933. Max hours: 8 Credits. **Semester Hours:** 8 to 8

### **UEDU 5934 - Extended Internship & Learning Community**

Teacher candidates engage in systematic observation of, participation in, design of, and reflection on curricular, instructional, and management practices across the full range of educational programs within a school. Additionally, they participate in the activities of a professional learning community. Cross-listed with UEDU 4934. Repeatable. Max Hours: 8 Credits. **Semester Hours:** 3 to 8

## **Women's Studies**

### **WGST 1050 - Introduction to Women's and Gender Studies**

This course provides an introduction to key concepts, themes and approaches to the interdisciplinary field of women's and gender studies. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 1111 - First Year Seminar**

Restriction: Restricted to Freshman level students. Max hours: 3 Credits. **Semester Hours:** 1 to 3

### **WGST 2900 - Smart Girl Leadership Training and Practicum**

Provides leadership and mentoring training, and a practicum in which UCD students mentor teenagers in their community or school settings. Following completion of the training, students work as near-peer mentors and coaches with groups of teenage girls in the Denver community and apply the skills learned in their training. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **WGST 3010 - Sociology of Human Sexuality**

Increases the understanding of differences in views of sexuality, specifically the link between sex and reproduction and its role as the motivation for gender roles and sex acts. Explores the history of sexuality, cross-cultural studies and primate modeling. Cross-listed with SOCY 3010. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 3020 - Gender, Sexuality and Race in American Popular Culture**

This course explores the impact of popular culture on the lived experience of diverse women and men in America. Students will examine how cultural media (including film, television, print ads, music & digital games) can both reproduce and challenge existing structural inequalities. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 3080 - Sex and Gender**

Causes and consequences of sex role differentiation at the individual, group and societal levels. Current issues related to changing norms and values concerning gender in modern society are examined. Cross-listed with SOCY 3080. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 3343 - Women & Gender in US History**

This course will explore women and gender as drivers of US history. From politics to popular culture, jobs to sexual empowerment, civil rights to economic restructuring, we will use gender as a lens to re-envision familiar stories about American history. Cross-listed with WGST 5343, HIST 3343, and HIST 5343. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 3450 - Contemporary Women Writers**

Examines how women write about a specific theme, such as home, work, family, the "other," as well as how women's writing may differ from men's. Theme and genre vary. Prereq: sophomore standing or higher. Cross-listed with ENGL 3450. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 3700 - Sociology of the Family**

The family as a social institution. Historical development and contemporary cross-cultural analysis, with emphasis on contemporary American families. Cross-listed with SOCY 3700. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 3840 - Independent Study: WGST**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Repeatable. Max Hours: 6 Credits.

**Semester Hours:** 1 to 3

### **WGST 3939 - Internship**

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: Students must have junior standing and at least a 2.75 GPA and must work with Experiential Learning Center advising to complete a course contract and gain approval. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3



## **WGST 4010 - Special Topics in Women's and Gender Studies**

Examines current topics in the field of Women's studies and Gender studies. Topics vary from term to term. May be repeated as long as the topic is distinct and different from courses student has already received credit for. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

## **WGST 4150 - Gender Politics in the Middle East: Beyond Orientalism & Islamism**

This course is about Middle Eastern women's subjectivity and various forms of agency. It explores the nexus of domestic, regional and international forces that shapes the lives of Middle Eastern women, in particular in the Algerian, Egyptian, Iranian, Israeli and Palestinian contexts. Far from being silent observers of the contests among these forces, as is often assumed, Middle Eastern women have been active actors in the public arena since the 19th century colonial encounter and the importation of the modern state to the region using an array of means to make their voices heard. Theirs were often more militant than those of their countrymen. The course is divided into two parts. The first part provides an overview of the theoretical notions discussed such as Orientalism, agency, colonialism and post-colonialism. Related to this theoretical section is a historical overview that is necessary to the understanding of the contemporary conditions of Middle Eastern women and the continuities and changes between past and present. The second part covers pressing topics in the lives of Middle Eastern women in the post-independence era such as the rise of Political Islam, the global trend of democratization, war and occupation. The emphasis in this section is on women as active participants in the debates surrounding these issues, rather than as objects of them. The readings assigned include both texts written by scholars from the region and by others from without. They provide analyses of the contexts within which Middle Eastern women's struggles take place. In addition, students will be exposed to materials produced by Middle Eastern women activists that express their own opinions and views in order to avoid misrepresentation and to reflect the diversity among them. Cross-listed with PSCI 4150. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **WGST 4215 - Women's Rights, Human Rights: Global Perspectives**

Explores the global feminist movement's campaign to "engender" human rights. Examination of women's human-rights issues and the critique of this campaign as representing cultural imperialism. Prereq: 6 hours of political science or permission of instructor. Cross-listed with PSCI 4215. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **WGST 4225 - Urban America: Colonial Times to the Present**

Rise of the American city from colonial times to present. Major emphasis on the process of urbanization since 1840: town promotion, the industrial city, immigration, boss politics and reform, urban technology, transportation systems, minorities, city planning, and the future of

urban America. Cross-listed with HIST 4225, HIST 5225, WGST 5225, GEOG 4625. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4230 - Women in the West**

Focuses on ways in which women, from the mid-19th century through the mid-20th century, of different races, classes, and ethnic background, have interacted and been active participants in the development of the western states. Cross-listed with HIST 4230, HIST 5230 and WGST 5230. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4248 - Gender, Globalization and Development**

Analyzes the effects of globalization on the gendered processes of international development and strategies to empower women to achieve gender justice across race, class and national divisions. Cross-listed with PSCI 4248/5245 and WGST 5248. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4270 - Social Meanings of Reproduction**

Reproduction involves more than biological processes, assuming symbolic, political, and ideological meanings. This course examines contested meanings of reproduction, including how people experience reproduction, controversies over who should reproduce (and under what circumstances), and how public policy mediates these conflicts. Cross-listed with SOCY 4270, SOCY 5270 and WGST 5270. Prereq: junior standing or higher or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4303 - Sex and Gender in Modern Britain**

Examines modern British history by focusing on sex and gender as central aspects in people's lives. Considers the ways gender shapes the realms of politics, economics, society and culture in Britain from the 18th century to the present. Cross-listed with HIST 4303/5303 and WGST 5303. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4306 - Survey of Feminist Thought**

Examines changes and continuities in feminist thought from the 18th century to the present, using historical and literary materials. Explores the ways that women's characteristics, experiences, and capabilities have been understood and challenged. Cross-listed with ENGL 4306, 5306, HIST 4306, 5306, WGST 5306. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4307 - History of Sexuality**

Explores the relationships between gender and norms, sexual practice, and ideas about sexuality in Europe and the United States. Examines how sex and sexuality have changed over

time and how those changes relate to social, cultural, political and economic history. Cross-listed with HIST 4307/5307 and WGST 5307. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4308 - Contemporary Feminist Thought**

This course explores contemporary feminist thought in philosophy and literature in the 20th and 21st centuries. Topics include lesbianism, black feminism, Chicana feminism, transgender identity, women and work and others. Cross-listed with ENGL 4308, ENGL 5308, PHIL 4308, PHIL 5308, WGST 5308. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4345 - Gender, Science, and Medicine: 1600 to the Present**

Examines the ways science and medicine have both shaped and been shaped by ideas about gender. Pays particular attention to the relationship between scientific/medical ideas about the sexes and the social organization of gender. Cross-listed with HIST 4345/5345 and WGST 5345. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4420 - Goddess Traditions**

Explores the many forms which goddesses have assumed through history, including the Neolithic Great Mother and her heiresses in the ancient Mediterranean cultures, such as: Isis, Ishtar, Demeter, Hecate, Aphrodite, Artemis, Athena and others, and their parallels in India. Goddess traditions have encompassed a full spectrum from virgins to Great Mothers to dark underworld goddesses of death and destruction. Cross-listed with RLST 4420/5420 and WGST 5420. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4500 - Feminist Philosophy**

Seminar on key debates & figures in historical & contemporary feminist philosophy. Topics may include: rights, embodiment, gender, sexuality, race, reason, & violence. Figures may include: Wollstonecraft, Stanton, Beauvoir, Judith Butler, and bell hooks. Crosslisted with WGST 5500, PHIL 4500 & 5500. **Semester Hours:** 3 to 3

### **WGST 4510 - Whores and Saints: Medieval Women**

Studies how women are presented in texts, as well as works by women. Investigates the roles open to women and societal attitudes toward women, who were considered seductresses, saints, scholars and warriors in the middle ages. Prereq: Nine hours of literature courses or instructor permission. Cross-listed with ENGL 4510/5510, RLST 4730/5730 and WGST 5510. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4511 - French Women Writers**

Designed to explore writings by French and Francophone women from the Middle Ages to the present. Addresses the question of what it means to be a woman and want to write. The selections include a wide variety of genres: autobiographical writings, stories, poems, manifestos, letters, political and historical documents. Note: This course assumes that students have passed FREN 3112 or 3122 or an equivalent course, plus one other 3000 level course in French. Cross-listed with FREN 4510/5510 and WGST 5511. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4540 - Race, Class, and Gender in Spanish Golden Age Literature**

Explores works of various genres in relation to their social and political contexts in 16th and 17th century Spain, emphasizing the cultural attitudes toward race, class, and gender that inform them. Prereq or Coreq: SPAN 3101. Cross-listed with SPAN 4340/5340 and WGST 5540. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4555 - International Women's Resistance**

Examines local and international struggles of women to build peace and justice by resisting systems of inequality such as colonialism, racism, patriarchy, globalization, and religious intolerance. Cross-listed with PSCI 4555/5555, ETST 4555 and WGST 5555. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4564 - Gender and Politics**

Analysis of the political experience of women and of strategies for change. Emphasis on the U.S. Cross-listed with PSCI 4564. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4610 - Communication, Media, and Sex**

Develop the tools to think critically about representations of sexuality and to understand the social construction of sexuality, the role of sexual representations in mass media and society, and the complex relationships between sexual acts, identities, and desires. Cross-listed with COMM 4610. Restriction: Restricted to Junior, Senior, or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4660 - Queer Media Studies**

Queer Media Studies is a discussion-based, writing-intensive seminar that examines the history and development of U.S. LGBTQI media by focusing on media texts and production, sociocultural context, and media reception. Cross-listed with COMM 4660, COMM 5660, WGST 5660. Restriction: Restricted to students with junior standing or higher or permission from the instructor. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4710 - Women and Religion**

A sociological exploration of the contemporary roles of women in religion. Course examines American and world religious groups with an eye to women's involvement. Considers how women have changed these traditions as they take on leadership roles and discusses the tensions that arise within these traditions as a result of their expanded participation. Cross-listed with HUMN 5710, SSCI 4710/5710, WGST 5710, RLST 4710/5710. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4780 - Violence in Relationships**

Course focuses on the study of violence among individuals involved in intimate relationships; factors in society such as norms, laws and institutions that are related to creating violence among intimates; and social policies, prevention, intervention and treatment programs. Cross-listed with SOCY 4780, SOCY 5780 and WGST 5780. Prereq: junior standing or higher or permission of instructor. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4827 - Women and the Law**

Examines the role of the courts in the development of public policy toward women; how the legal system affects the economic power, family roles, safety and political participation of women. Cross-listed with PSCI 4827 and ETST 4827. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 4840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Prereq: permission of instructor. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **WGST 4880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **WGST 4933 - Philosophy of Eros**

What does it mean to understand philosophy as an erotic activity? This question will be examined, first by studying Plato's dialogues-such as Lysis, Symposium and Republic-and then by reading texts from Sigmund Freud, Michael Foucault and others. Cross-listed with PHIL

4933/5933, WGST 5933, SSCI 5933 and HUMN 5933. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5010 - Special Topics in Women's and Gender Studies**

Examines current topics in the field of Women's studies and Gender studies. Topics vary from term to term. May be repeated as long as the topic is distinct and different from courses student has already received credit for. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 3

### **WGST 5225 - Urban America: Colonial Times to the Present**

Rise of the American city from colonial times to present. Major emphasis on the process of urbanization since 1840: town promotion, the industrial city, immigration, boss politics and reform, urban technology, transportation systems, minorities, city planning, and the future of urban America. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4225, HIST 5225, WGST 5225, GEOG 4625. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5230 - Women in the West**

Focuses on ways in which women, from the mid-19th century through the mid-20th century, of different races, classes, and ethnic background, have interacted and been active participants in the development of the Western states. Cross-listed with WGST 4230 and HIST 4230/5230. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5248 - Gender, Globalization and Development**

Analyzes the effects of globalization on the gendered processes of international development and strategies to empower women to achieve gender justice across race, class and national divisions. Cross-listed with WGST 4248 and PSCI 4248/5245. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5270 - Social Meanings of Reproduction**

Reproduction involves more than biological processes, assuming symbolic, political, and ideological meanings. This course examines contested meanings of reproduction, including how people experience reproduction, controversies over who should reproduce (and under what circumstances), and how public policy mediates these conflicts. Cross-listed with SOCY 4270, SOCY 5270 and WGST 4270. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5303 - Sex and Gender in Modern Britain**

Examines modern British history by focusing on sex and gender as central aspects in people's lives. Considers the ways gender shapes the realms of politics, economics, society and culture in Britain from the 18th century to present. Cross-listed with WGST 4303 and HIST 4303/5303. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5306 - Survey of Feminist Thought**

Examines changes and continuities in feminist thought from the 18th century to the present, using historical and literary materials. Explores the ways that women's characteristics, experiences, and capabilities have been understood and challenged. Cross-listed with ENGL 4306, 5306, HIST 4306, 5306, WGST 4306. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5307 - History of Sexuality**

Explores the relationships between gender and norms, sexual practice, and ideas about sexuality in Europe and the United States. Examines how sex and sexuality have changed over time and how those changes relate to social, cultural, political and economic history. Cross-listed with WGST 4307 and HIST 4307/5307. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5308 - Contemporary Feminist Thought**

This course explores contemporary feminist thought in philosophy and literature in the 20th and 21st centuries. Topics include lesbianism, black feminism, Chicana feminism, transgender identity, women and work and others. Cross-listed with ENGL 4308, ENGL 5308, PHIL 4308, PHIL 5308, WGST 4308. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5343 - Women & Gender in US History**

This course will explore women and gender as drivers of US history. From politics to popular culture, jobs to sexual empowerment, civil rights to economic restructuring, we will use gender as a lens to re-envision familiar stories about American history. Cross-listed with WGST 3343, HIST 3343, and HIST 5343. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5345 - Gender, Science and Medicine: 1600 to the Present**

Examines the ways science and medicine have both shaped and been shaped by ideas about gender. Pays particular attention to the relationship between scientific/medical ideas about the sexes and the social organization of gender. Cross-listed with WGST 4345 and HIST 4345/5345. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5420 - Goddess Traditions**

Explores the many forms which Goddesses have assumed through history, including the Neolithic Great Mother and her heiresses in the ancient Mediterranean cultures, such as: Isis, Ishtar, Demeter, Hecate, Aphrodite, Artemis, Athena and others, and their parallels in India. Goddess traditions have encompassed a full spectrum from virgins to Great Mothers to dark underworld Goddesses of death and destruction. Cross-listed with WGST 4420 and RLST 4420/5420. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5500 - Feminist Philosophy**

Seminar on key debates & figures in historical & contemporary feminist philosophy. Topics may include: rights, embodiment, gender, sexuality, race, reason, & violence. Figures may include: Wollstonecraft, Stanton, Beauvoir, Judith Butler, and bell hooks. Cross-listed with WGST 4500, PHIL 4500 & 5500. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5510 - Whores and Saints: Medieval Women**

Studies how women are presented in texts, as well as works by women. Investigates the roles open to women and societal attitudes toward women, who were considered seductresses, saints, scholars and warriors in the middle ages. Prereq: Nine hours of literature courses or instructor permission. Cross-listed with WGST 4510, ENGL 4510/5510 and RLST 4730/5730. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5511 - French Women Writers**

Designed to explore writings by French and Francophone women from the Middle Ages to the present. Addresses the question of what it means to be a woman and want to write. The selections include a wide variety of genres: autobiographical writings, stories, poems, manifestos, letters, political and historical documents. Note: This course assumes that students have passed FREN 3112 or 3122 or an equivalent course, plus one other 3000 level course in French. Prereq: Graduate standing. Cross-listed with WGST 4511 and FREN 4510/5510. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5540 - Race, Class and Gender in Spanish Golden Age Literature**

Explores works of various genres in relation to their social and political contexts in 16th and 17th century Spain, emphasizing the cultural attitudes toward race, class, and gender that inform them. Prereq: graduate standing. Cross-listed with WGST 4540 and SPAN 4340/5340. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5555 - International Women's Resistance**

Examines local and international struggles of women to build peace and justice by resisting systems of inequality such as colonialism, racism, patriarchy, globalization, and religious



intolerance. Cross-listed with WGST 4555, ETST 4555 and PSCI 4555/5555. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5660 - Queer Media Studies**

Queer Media Studies is a discussion-based, writing-intensive seminar that examines the history and development of U.S. LGBTQI media by focusing on media texts and production, sociocultural context, and media reception. Cross-listed with COMM 4660, COMM 5660, WGST 4660. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5710 - Women and Religion**

A sociological exploration of the contemporary roles of women in religion. Course examines American and world religious groups with an eye to women's involvement. Considers how women have changed these traditions as they take on leadership roles and discusses the tensions that arise within these traditions as a result of their expanded participation. Cross-listed with HUMN 5710, SSCI 4710/5710, WGST 4710, RLST 4710/5710. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5720 - Sexuality, Gender and Their Visual Representations**

Studies sexuality, gender and identity representation from classical antiquity through the present in the visual arts. Uses the literature of visibility, feminism, race and queer theory. Explores representations of femininity, masculinity and androgyny and their reinforcement and challenge to gender-identity norms. Cross-listed with HUMN 5720 and SSCI 5720. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5780 - Violence in Relationships**

Course focuses on the study of violence among individuals involved in intimate relationships; factors in society such as norms, laws and institutions that are related to creating violence among intimates; and social policies, prevention, intervention and treatment programs. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SOCY 4780, SOCY 5780 and WGST 4780. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 5840 - Independent Study**

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: permission of instructor. Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 3

### **WGST 5880 - Directed Research**

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

### **WGST 5900 - Smart Girl Coaching Training and Practicum**

Course provides training (lecture and role-playing) in coaching and mentoring which will be applied to support near-peer guides in delivering the Smart Girl curriculum in school settings. Following the completion of the training, students work as coaches for teams of near-peer mentors and groups of teenage girls in the Denver Community, and apply the skills learned in their training. Prereq: Graduate standing. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 3 to 3

### **WGST 5933 - Philosophy of Eros**

What does it mean to understand philosophy as an erotic activity? This question will be examined, first by studying Plato's dialogues-such as Lysis, Symposium and Republic-and then by reading texts from Sigmund Freud, Michael Foucault and others. Cross-listed with PHIL 4933/5933, WGST 4933, SSCI 5933 and HUMN 5933. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **WGST 6010 - Methods and Theories of Feminism and Gender Studies**

Provides graduate-level interdisciplinary study in historiography, methodologies and theories of women's, gender and sexuality studies and considers how culture is constructed around these categories. Cross-listed with SSCI 6010 and HUMN 6010. Prereq: Graduate standing. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **Other Courses**

#### **AMBA 5939 - Internship for MBAs**

Supervised experiences involving the applications of concepts and skills in an employment setting. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Repeatable. Max Hours: 6 Credits. **Semester Hours:** 1 to 6

#### **AMBA 6201 - Leading in Organizations**

This course addresses core leadership challenges, such as motivating a diverse employee base, working in and managing teams, designing an organization and building a healthy culture, leading organizational change, and managing power and politics in the workplace. Restrictions:

Restricted to AMBA majors within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6202 - Workforce Management**

This course focuses on the management and deployment of human resources in organizations. Students learn how leaders can utilize recruitment and staffing strategies, performance management, compensation and benefits, data and analytics, and training and leadership development programs to foster a successful workforce. Restrictions: Restricted to AMBA majors within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6210 - Data Analytics I**

This course covers basic statistical concepts and methods including descriptive and graphical tools, exploratory data analysis, statistical inference, and bivariate methods. Emphasis is placed on proper choice of methods and interpretation of the results. Lectures, assignments, and projects are grounded in real data taken from business applications. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6211 - Data Analytics II**

This course allows decision-makers to understand relationships among key business metrics. Applications of these methods may be found throughout the organization from human resources management and marketing to accounting and finance. Multiple regression provides the methodological framework. Business case studies are used extensively throughout the course. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6220 - Business Law and Ethics**

This course provides the One Year MBA student with a working knowledge of the legal and ethical issues involved in business decision-making in four areas: 1) tort law, 2) business organizations, 3) employment law, 4) intellectual property law. The influence of legal and ethical issues on an organization's decision-making is stressed. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6230 - Financial Accounting**

This course emphasizes the use of external financial reporting information when making business decisions, particularly to assess a firm's overall financial condition and performance for investment and credit decisions. To understand the underlying basis of financial reporting the concepts and mechanics of generating financial statements is addressed in a nontechnical

manner. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6231 - Management Accounting**

This course emphasizes the use of management accounting information when making business decisions within organizations. Topics include product and service costing, planning profitability and controlling operations through budgeting techniques and short-term non-routine decision making. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6240 - Marketing Principles**

This course focuses on marketing theory and its application, emphasizing the study of core principles that can be applied to a wide range of marketing situations, both large and small. The course encourages critical analysis via a case-based approach to learning. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6241 - Marketing Strategy**

This course focuses on applying the fundamentals of marketing theory in real-world settings. Guest-speakers, company site visits, and developing a marketing plan are used to emphasize marketing principles. The distinction between small-business-oriented lean marketing and large-scale marketing effort of corporations will be drawn out thru the course experience. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6250 - Digital Leadership and Governance**

This course examines strategic issues involved with the effective management of information technology (IT) in businesses including the role of IT as a driver of business innovation and strategy. By examining how an organization makes IT investment decisions, implements new IT assets, delivers services, assesses risk and measures its own performance, a Digital Leadership and Governance portfolio can assure the organization is meeting its compliance and security responsibilities, along with fulfilling strategic objectives. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

**Semester Hours:** 1.5 to 1.5

### **AMBA 6251 - Data Management Strategy**

This course provides students with an overview of the key concepts for establishing an organizations data management strategy, ensuring that its operational and analytical needs are efficiently, effectively, and securely addressed. The course emphasizes real-case scenarios that

companies face when addressing global operational and analytical data challenges. The course also addresses current trends in managing structured data as organizations move to the Cloud-based computing services. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6260 - Applied Microeconomics**

This course provides an overview of "thinking like an economist". The course covers an introduction to supply and demand and the basic forces that determine an equilibrium in a market economy. Students learn to understand: consumer behavior, firm behavior, and analyze different types of market structures (monopoly, oligopoly and a competitive market). Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6261 - Applied Macroeconomics**

This course explores the causes and effects of unemployment, interest rates, and inflation. The roles of the central bank and the government in implementing policy are discussed. The course provides models of macroeconomics will be introduced and illustrated using historical US data. The course prepares a student to take intermediate macroeconomics. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6270 - Operations Management**

This course is concerned with sales and operations planning through coordination of resource planning, inventory control, logistics management, network configurations, demand management and work flow efficiencies with an operations strategy perspective. Computer-based operations analytics to support decision making is emphasized. Current innovations and future trends in operations are included. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6271 - Supply Chain Management**

This course is concerned with the design, analysis, management and control of supply chains. Because of advances in globalizations, sustainability and technology, course emphasis includes integration of processes and systems, relationship management of upstream and downstream players, configuration of network designs and evaluation of strategies that incorporate current and future trends. Computer-based analytics and the Supply Chain Operations Reference (SCOR) model are addressed. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6280 - Finance Management I**

This two-part course deals with decisions a business firm takes to maximize stakeholder value. Students learn to use theories and techniques to examine and understand business and security valuation, the cost of capital, capital budgeting and capital structure, and other related issues. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6281 - Finance Management II**

This two-part course deals with decisions a business firm takes to maximize stakeholder value. Students learn to use theories and techniques to examine and understand business and security valuation, the cost of capital, capital budgeting and capital structure, and other related issues. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6290 - Strategy Foundations**

This course is a graduate level introduction to the topic of strategic management - definitions, core ideas, and a broad understanding of what is required for the firm to build a competitive advantage that is sustainable over the medium to long term. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6291 - Strategy in Practice**

The capstone of the MBA and a deeper dive into strategic management - covering the essential tools used to formulate a firm's strategy, but also building on the core functional area courses to tackle strategy in practice via an in-depth, group-based, simulation. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6301 - Global Business**

This course examines the dynamic context of global business from both a multinational and entrepreneurial perspective. Topics covered include the cultural, political-legal, technological, economic, financial, and sustainability aspects of the international business environment. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **AMBA 6310 - International Business Abroad**

The One Year MBA International Business Study Abroad is an experiential learning course conducted abroad. Available for One Year MBA students. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **AMBA 6320 - Career and Professional Development**

This course focuses on preparing students to successfully seek their next position and develop the professional skills to excel in their long-term career. Sample topics include: Personal Brand Readiness; Business Communication Skills; Business Professionalism; and Interview Skills.

Restrictions: Restricted to graduate majors within the Business School with the AMBA major code. Repeatable. Max Hours: 1.5 Credits. **Semester Hours:** 0.5 to 1

## **AMBA 6330 - Introduction to Business Consulting for MBAs**

The course is designed to expose students to the real-world application of project and client management. The course includes partnerships with external organizations, and provides students the platform to conduct strategic consulting on specific initiatives within those organizations. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **AMBA 6401 - Negotiations**

This course is designed to give students hands on experience developing critical career or professional skills, with a specific focus on negotiation and bargaining effectiveness. Through simulations, role-playing cases, and personal experience, students practice and hone their negotiation skills, gain insight into interpersonal influence and communication, and learn how they are perceived by others. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max Hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

## **AMBA 6410 - Investments**

This course provides students with a broad understanding of financial theory, financial markets and products, and analytical tools and techniques needed for investment decision making. Topics include portfolio theory, equilibrium models of asset pricing, equity valuation and option fundamentals. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max Hours: 1.5 Credit Hours. **Semester Hours:** 1.5 to 1.5

## **AMBA 6420 - Visual Analytics for Big Data**

This course deals with the core concepts and skills behind big data for business applications, such as SQL for data extraction, data cleaning and processing, RStudio and SAS for modeling, and Tableau and Power BI for data visualization and PowerPoint for presentations. Detailed business applications integrating the concepts and skills are demonstrated. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max Hours: 1.5 Credits **Semester Hours:** 1.5 to 1.5

## **AMBA 6430 - Digital Marketing Strategies**

The marketing of services which constitutes 80% of the US economy is changing very rapidly. This course uses cases and speakers to examine how service-oriented organizations make effective transformations from traditional to digital marketing strategies. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max Hours: 1.5 Credit Hours. **Semester Hours:** 1.5 to 1.5

### **AMBA 6440 - Conflict Management**

Using negotiation principles as a foundation, students gain hands on experience developing critical [alt: career or professional] management skills, with a focus on conflict management, group consensus-building, managing cultural differences, and minimizing decision biases. Through simulations, role-playing cases, and personal experience, students practice and hone their skills and give and receive performance feedback to others. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max Hours: 1.5 Credit Hours. **Semester Hours:** 1.5 to 1.5

### **AMBA 6450 - Advanced Corporate Finance**

This course extends the basic principles of corporate finance to an advanced level to provide an intuitive and adequate framework for making financial decisions. The course deals with topics such as agency problem, valuation, and capital structure decision. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max Hours: 1.5 Credit Hours. **Semester Hours:** 1.5 to 1.5

### **AMBA 6460 - Digital Marketing Analytics**

This course is designed to provide you with an overview of the ever-changing digital marketplace while also equipping you with hands-on experiences and analytical skills that you will need to perform vital functions in various areas of digital marketing. By the end of the course, you will be able to walk into any company with an online presence and improve their use of the digital media. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max Hours: 1.5 Credit Hours. **Semester Hours:** 1.5 to 1.5

### **AMBA 6470 - Applied Business Consulting**

This course provides students who have completed AMBA6330 (Introduction to Business Consulting for MBAs) the opportunity to apply their learning to a real-world business-consulting project. Students will scout, scope, consult and present on a project with a company of their choosing. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max Hours: 1.5 Credits **Semester Hours:** 1.5 to 1.5

### **AMBA 6490 - One Year MBA Practicum**



The One Year MBA Practicum course trains students in real-world applications. In the Practicum, students, under the direction of faculty, address a real-world problem. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 5 Credits. **Semester Hours:** 5 to 5

### **AMBA 6840 - Independent Study**

Independent study. Limited to OYMBA students only. Allowed only under special and unusual circumstances. Permission of Program Director required. Prereq: Limited to OYMBA students only. Allowed only under special and unusual circumstances. Permission of Program Director required. Max Hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **HDFR 1005 - Child Development**

This course focuses on the study of human growth, development and ecology from conception to adolescence. The emphasis is on the major theories of child growth and development and the implications of current research findings to better understand child development. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 1050 - Trailblazing and Leading in Student Affairs: Student Affairs Leadership Dev**

This course provides a basic introduction to student affairs development practices and perspectives. The course provides an exploration of student affairs leadership identity and college student's leadership role in higher education environments. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 1080 - Lifespan Issues in Family Violence**

This course examines family violence over the lifespan from family system and ecological perspectives. The course explores development, definitions, theory, correlates, and the occurrence of family violence over the lifespan; including practice, interventions, and policy within school and community contexts. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 2110 - Child Ecology**

This course focuses on the study of human growth and ecology from conception to adolescence. The emphasis is on the major theories of child growth, development, and ecology and the implications of classic and contemporary research in the community. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 4850 - Family Systems Therapy, Religion and Spirituality**

This course examines how the intersection between different religious and spiritual frameworks affects family systems. A strengths-based ecological perspective, family therapy theories and family systems theories will be used to understand religious and spiritual frameworks in working with families in schools and communities. Cross-listed with RLST 4850. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 5002 - Family Life and Community Programming I**

This course teaches the principles, philosophies, models, and strategic methods of family life education for strengthening interpersonal and family relationships. Culturally competent students will learn about the development and implementation of effective educational programs and experiences within different community settings. Cross-listed with HDFR 4002. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 5020 - Black and Latino Children in Families and Schools**

With a focus on application of scholarship to practice, this interdisciplinary course will introduce graduate students to scholarly literature from family sciences, sociology, education and related fields to understand Black and Latino children within family, school and community systems. Restriction: Restricted to graduate level students. Cross-listed with ETST 5021. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 5180 - Family and Community-Centered Classroom Practice**

This intensive course is designed to help teachers develop a responsive, collaborative, and theorybased understanding of the interaction of schools, families and the local community. In this course, you will examine the impact that various social interactions had on yourself, a student's family, and the community as a whole. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 6075 - Family Policy and Law**

Theoretical and practical exploration of the process of policy-making, with particular attention to the role of courts, that impact families and children to provide foundations for research and advocacy related to family policy and law. Cross-listed with HDFR 7075. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **HDFR 7010 - ProSeminar in Family Science & Human Development**

This course aims to introduce 1st year PhD students in FSHD to core theoretical and empirical work in the discipline and the intellectual traditions that undergird the program. Students will be introduced to faculty research that cut across disciplines and that focus on contexts that shape life trajectories and opportunities. Max Hours: 1 Credits. **Semester Hours:** 1 to 1

## **HDFR 7050 - Special Topics in Human Development and Family Relations**

Advanced study of special topics in human development in family, community and educational settings in HDFR, to be selected by the instructor. Repeatable. Max Hours: 9 Credits. **Semester Hours:** 1 to 6

## **HDFR 7075 - Family Policy and Law**

Theoretical and practical exploration of the process of policy-making, with particular attention to the role of courts, that impact families and children to provide foundations for research and advocacy related to family policy and law. Cross-listed with HDFR 6075. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HDFR 7100 - Family Issues in Immigration and Migration**

Exploration of family issues related to immigration in the US context, including how policies shape emigration and immigration of families. Focus will be on social, cultural, political, and economic factors related to early childhood, parenting, adolescent identity, marriage and family formation, health and wellbeing and integration in the US. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HDFR 7260 - Family Diversity and Social Justice**

Through this course, students will explore theory and research on the family, using interdisciplinary research and theory to inform their knowledge and generation of questions that recognize the challenges faced by diverse families in a shifting societal and national environment. Restriction: Graduate level students. Max hours: 3 Credits. **Semester Hours:** 3 to 3

## **HDFR 7270 - Advanced Study of Human Development**

This course is an intensive overview of major theories undergirding the study of human development. The emphasis is upon broad ecological theories that cut across different aspects of human development, including social and emotional development, cognition, and achievement within contemporary societal social structures. Max Hours: 3 Credits. **Semester Hours:** 3 to 3

## **HDFR 7840 - Human Development and Family Relations Independent Study**

Repeatable. Max Hours: 12 Credits. **Semester Hours:** 1 to 6

## **MARC 5780 - Behavioral & Biomedical Sciences Research: Ethics & Issues**

Students will critically review and analyze some of the major ethical and policy issues that arise during the conduct of basic and applied behavioral research. Prereq: PSYC 1000, 1005, 2090, 2220 and 3090 or Graduate standing or instructor permission. Term offered: fall. Cross-listed with PSYC 4780, PSYC 5780 and MARC 4780. Max hours: 3 Credits. **Semester Hours:** 3 to 3

### **PMBA 6310 - International Business Abroad**

The MBA International Business Study Abroad is an experiential learning course conducted abroad. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6320 - Career and Professional Development**

This course focuses on preparing students to successfully seek their next position and develop the professional skills to excel in their long-term career. Sample topics include: Personal Brand Readiness; Business Communication Skills; Business Professionalism; and Interview Skills. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6520 - Leading a Productive Workforce**

This course addresses how leaders can effectively manage their employees. Some topics that will be addressed in the course include: leadership styles and approaches; self-management; personality differences; values, attitudes, perception and motivation; and effective communication and conflict resolution. Note: Credit cannot be received for this course if BUSN 6520 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6522 - Building Effective Work Environments**

This course focuses on how leaders can build organizational environments where individuals and teams can be productive. Some topics that will be addressed include: team formation and management; effective organizational structures and cultures; some effective human resource practices related to selection, evaluation and development; and managing power, politics and change. Note: Credit cannot be received for this course if BUSN 6520 has already been completed. Pre-req: Leading a Productive Workforce. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6530 - Data Analytics I**

This course covers basic statistical concepts and methods including descriptive and graphical tools, exploratory data analysis, statistical inference, and bivariate methods. Emphasis is placed

on proper choice of methods and interpretation of the results. Lectures, assignments, and projects are grounded in real data taken from business applications. Note: Credit cannot be received for this course if BUSN 6530 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6532 - Data Analytics II**

This course allows decision-makers to understand relationships among key business metrics. Applications of these methods may be found throughout the organization from human resources management and marketing to accounting and finance. Multiple regression provides the methodological framework. Case studies are used extensively throughout the course. Note: Credit cannot be received for this course if BUSN 6530 has already been completed. Prereq: PMBA 6530. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6540 - Business Law**

This course provides students with a working knowledge of the legal parameters for business decision making in four areas: 1) tort law, 2) business organizations, 3) employment law, and 4) intellectual property law. The influence of legal issues on an organization's decision-making is stressed. Note: Credit cannot be received for this course if BUSN 6540 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6542 - Business Ethics**

This course emphasizes analyzing business decisions from an ethical perspective, including how to spot and address red flags that foster unethical behavior. Governance and stakeholder management techniques that incentivize ethical behavior will be highlighted. Principle-based ethics are emphasized, namely, integrity, trust, accountability, transparency, fairness, respect, viability, and compliance with the rule of law. Note: Credit cannot be received for this course if BUSN 6540 has already been completed. Prereq: PMBA 6540. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6550 - Financial Accounting**

This course emphasizes the use of external financial reporting information when making business decisions, particularly to assess a firm's overall financial condition and performance for investment and credit decisions. To understand the underlying basis of financial reporting the concepts and mechanics of generating financial statements is addressed in a nontechnical manner. Note: Credit cannot be received for this course if BUSN 6550 has already been

completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6552 - Management Accounting**

This course emphasizes the use of management accounting information when making business decisions within organizations. Topics include product and service costing, planning profitability and controlling operations through budgeting techniques and short-term non-routine decision-making. Note: Credit cannot be received for this course if BUSN 6550 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6560 - Marketing Management I**

This course focuses on applications of analytical tools for understanding the dynamic marketing environment and creating value propositions, selecting target markets, and determining positioning strategies. Students evaluate and formulate the corresponding elements of a Marketing Plan. Note: Credit cannot be received for this course if BUSN 6560 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6562 - Marketing Management II**

This course continues Marketing Management Part I. The focus is on applications of analytical frameworks and decision-making regarding alternative product, price, service, channels, communication, and other marketing mix strategies. Students create the corresponding elements of a Marketing Plan. Note: Credit cannot be received for this course if BUSN 6560 has already been completed. Prereq: PMBA 6560. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6570 - Dynamics of Global Business**

This course examines the dynamics of global business from both a multinational and entrepreneurial perspective. Topics covered include the cultural, political, legal, economic-financial, trade and investment, and sustainability aspects of the international business environment. Offered prior to the international field trip, this course helps students cultivate a global mindset and provides them with key environmental and contextual information to enrich their international field study experience. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6572 - Global Business Operations and Practices**

This course examines key operations and practices of firms engaged in cross-border business. Topics covered include (1) the evaluation and selection of markets, partners, and route to markets, and (2) the management of business functions (e.g., marketing; human resource management; supply chain, operations, and information technology management; financial management and accounting) in an international context. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6610 - Digital Leadership and Governance**

This course examines strategic issues involved with the effective management of information technology (IT) in businesses including the role of IT as a driver of business innovation and strategy. By examining how an organization makes IT investment decisions, implements new IT assets, delivers services, assesses risk and measures its own performance, a Digital Leadership and Governance portfolio can assure the organization is meeting its compliance and security responsibilities, along with fulfilling strategic objectives. Note: Credit cannot be received for this course if BUSN 6610 or ISMG 6180 have already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6612 - Data Management Strategy**

This course provides students with an overview of the key concepts for establishing an organization's data management strategy, ensuring that its operational and analytical needs are efficiently, effectively, and securely addressed. The course emphasizes real-case scenarios that companies face when addressing global operational and analytical data challenges. The course also addresses current trends in managing structured data as organizations move to the Cloud-based computing services. Notes: Credit cannot be received for this course if BUSN 6610 or ISMG 6180 have already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6620 - Applied Microeconomics**

This course provides an overview of "thinking like an economist". The course covers an introduction to supply and demand and the basic forces that determine an equilibrium in a market economy. Students learn to understand: consumer behavior, firm behavior, and analyze different types of market structures (monopoly, oligopoly and a competitive market). Note: Credit cannot be received for this course if BUSN 6620 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6622 - Applied Macroeconomics**

This course explores the causes and effects of unemployment, interest rates, and inflation. The roles of the central bank and the government in implementing policy are discussed. The course provides models of macroeconomics that are introduced and illustrated using historical US data. The course prepares a student to take intermediate macroeconomics. Note: Credit cannot be received for this course if BUSN 6620 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6630 - Operations Management**

This course is concerned with operations management, including topics such as resource planning, inventory control, logistics management, network configurations, demand management, and workflow efficiencies. Quantitative analytics to support decision-making is used. Current innovations and future trends in operations are included. Note: Credit cannot be received for this course if BUSN 6630 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6632 - Analytics for Operations**

This course is concerned with building and applying formal models to solve important tactical and strategic problems found in the operations side of both private and public organizations. An emphasis is placed on optimization methods and covers skills necessary to build and evaluate models and to understand the reasoning behind model-based analysis. Note: Credit cannot be received for this course if BUSN 6630 has already been completed. Prereq: PMBA 6630. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6640 - Finance Management I**

This two-part course deals with decisions a business firm takes to maximize stakeholder value. Students learn to use theories and techniques to examine and understand business and security valuation, the cost of capital, capital budgeting and capital structure, and other related issues. Note: Credit cannot be received for this course if BUSN 6640 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6642 - Finance Management II**

This two-part course deals with decisions a business firm takes to maximize stakeholder value. Students learn to use theories and techniques to examine and understand business and security valuation, the cost of capital, capital budgeting and capital structure, and other related issues.



Note: Credit cannot be received for this course if BUSN 6640 has already been completed.  
Prereq: PMBA 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6710 - Strategic Management**

This course is a graduate level introduction to the topic of strategic management - definitions, core ideas, and a broad understanding of what is required for the firm to build a competitive advantage that is sustainable over the medium to long term. Note: Credit cannot be received for this course if BUSN 6710 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5

### **PMBA 6712 - Strategy in Practice**

The capstone of the MBA and a deeper dive into strategic management - covering the essential tools used to formulate a firm's strategy, but also building on the core functional area courses to tackle strategy in practice via an in-depth, group-based simulation. Note: Credit cannot be received for this course if BUSN 6710 has already been completed. Prereq: PMBA 6710. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits. **Semester Hours:** 1.5 to 1.5